

EUROPEAN ON-LINE DATABASE MARKETS , 1984 - 1989

INPUT

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**EUROPEAN ON-LINE DATABASE MARKETS
1984-1989**

OCTOBER 1984

EUROPEAN ON-LINE DATABASE MARKETS
1984-1989

ABSTRACT

This study, part of the Market Analysis and Planning Service Programme for Western Europe (MAPS/E), provides an assessment of the opportunities that lie ahead for on-line database services.

The analysis forecasts user expenditures over the 1984-1989 timeframe. The forecast covers the four major Western European country markets of France, Italy, the U.K., and West Germany. For each country eight market subsectors are defined and analysed: financial, economic/econometric, marketing/business, scientific and technical, patents, industry specific, legal, and news.

The report examines the major technological and marketing factors that are having a strategic impact on the development of this market. User attitudes, market opportunities, and pricing and profitability considerations are examined.

The report contains 172 pages, including 50 exhibits.

**EUROPEAN ON-LINE DATABASE MARKETS
1984-1989**

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EUROPEAN ON-LINE DATABASE MARKETS 1984-1989

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I INTRODUCTION

I INTRODUCTION

A. SCOPE OF THE REPORT

- The markets for on-line database services are a rapidly growing segment of the information services industry in Western Europe.
- Increasing attention is being paid to this market as it continues to gain significance within the "tradeable information" sector of the advanced economies. Publishers, governments and their agencies are examples of organisations that are carefully examining this market's strategic importance.
- INPUT set out in this report to assess the current state of the market. In particular INPUT desired to:
 - Establish the market's current size and structure and to project its expected growth in both the short and medium term.
 - Identify strategic issues both technological and societal that are likely to affect its future development.
 - Discuss the product and marketing issues that must be considered by the vendors of on-line database services.

- The report covers the markets in France, Italy, the United Kingdom and West Germany. The term Western Europe is used throughout this report to imply these four individual countries as a group.
- A separate report on the U.S. on-line database market has also been produced by INPUT. See Appendix E for a list of related INPUT reports.
- This report was provided by INPUT as part of its 1984 European Market Analysis and Planning Service (MAPS/E) for the information services industry.
- Enquiries and comments are invited by INPUT regarding this report and any related topics of interest.
- INPUT would like to express its thanks to all those companies and individuals that participated in the research programme undertaken for this report.

B. METHODOLOGY

- Field research for this report was obtained from a vendor interview programme that took place during April and May 1984.
- Fifty-one in-depth face-to-face interviews were conducted in the four Western European countries included in the study, France, Italy, the U.K. and West Germany.
- Efforts were made to spread these interviews across the various sectors of the on-line database market in order to gain a balanced assessment.
- The questionnaire used for the vendor interviews is included as Appendix C.

- Research into on-line database user attitudes was carried out through a mail questionnaire in the four countries. Current on-line users were targeted. The questionnaire used is included as Appendix D.
- One hundred and nine user questionnaires were returned out of a total mailing of 800, representing a return rate of over 13%.
- An analysis of the vendor and user sample is included as Appendix B.
- INPUT's previous ongoing research programmes in information services markets, products and technology were also important contributors to the analysis of this market.
- All market size assessments are presented in U.S. dollars for comparative purposes. The following conversion rates were used:
 - 8.9 French francs per dollar.
 - 1,798 lira per dollar.
 - 0.77 pounds per dollar.
 - 2.86 deutsche marks per dollar.
- Definitions of terms used in this report are included as Appendix A.

C. REPORT STRUCTURE

- The remaining chapters of this report are organised in the following way:

- Chapter II is an Executive Summary providing an overview of the contents of the entire report.
- Chapter III describes the current state of the on-line database market in the four Western European countries of France, Italy, the UK and West Germany. Market size and growth rates in both the short and medium term are analysed.
- Chapter IV examines strategic issues and future developments. The changing communications environment is discussed, as are the impacts of technological developments such as the PC, optical memory and advances in software. Societal issues are also addressed such as copyright law and transborder data flow.
- Chapter V discusses the major product and marketing challenges that must be met by on-line database vendors. Pricing, product enhancement and market opportunities are some of the subjects covered.
- Chapter VI presents the conclusions and recommendations that arose from this research programme.
- The appendices provide a definition of terms used, the sample analysis, questionnaires used and a list of related INPUT reports.

II EXECUTIVE SUMMARY

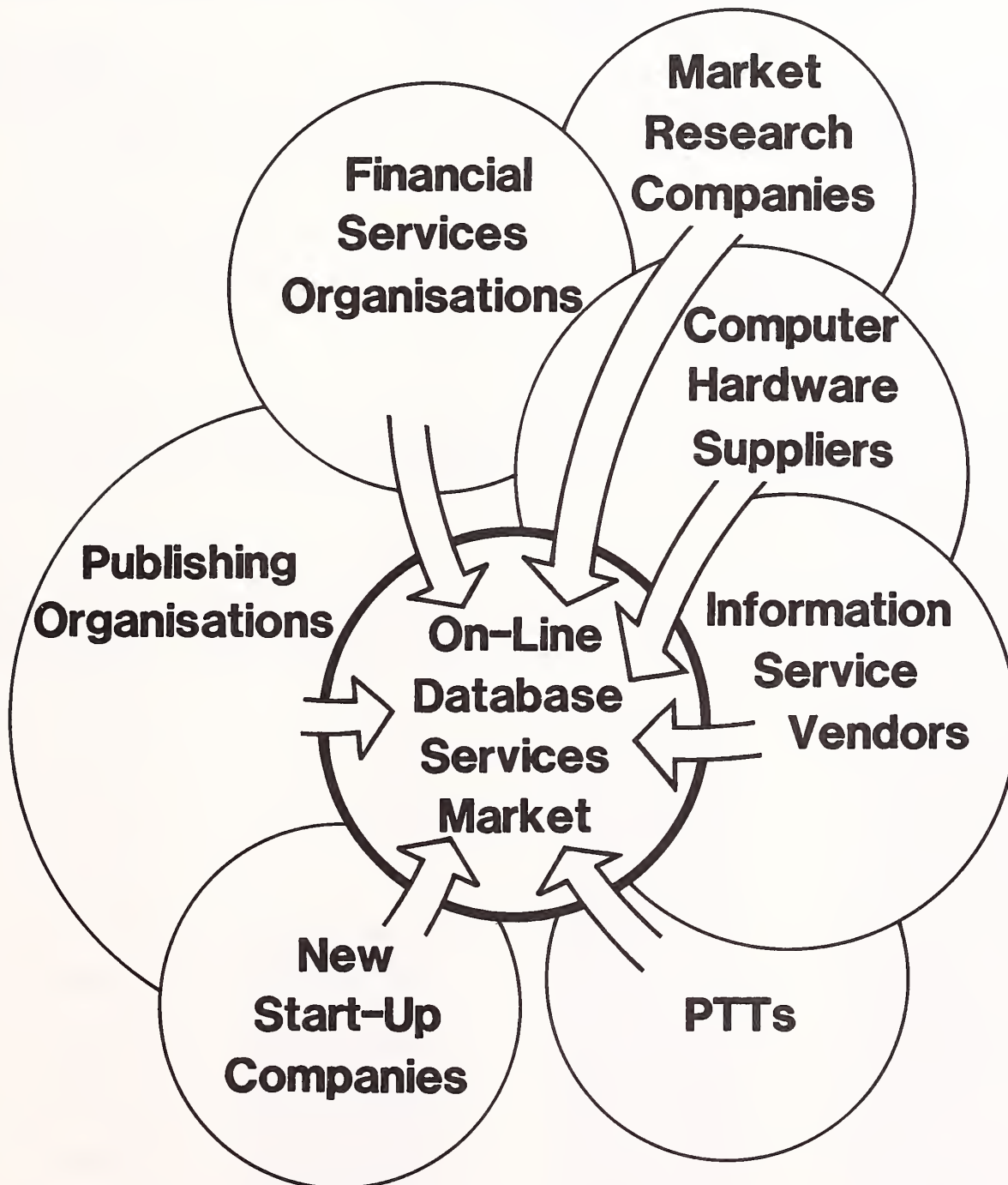
II EXECUTIVE SUMMARY

- This executive summary is designed in a presentation format in order to:
 - Help the busy reader quickly review key research findings.
 - Provide a ready-to-go executive presentation, complete with a script, to facilitate group communication.
- The key points of the entire report are summarised in Exhibit II-1 through II-6. On the left-hand page facing each exhibit is a script explaining its contents.

A. ON-LINE DATABASES—A FOCUS FOR THE FUTURE

- As the Western European countries move into the information age, increasing significance will be placed on the rapidly developing tradeable information sector of the economy.
- Key to that sector will be the market for on-line database services.
- This large, complex and rapidly growing market is increasingly becoming a focus of attention for many different types of organisations:
 - Information services vendors.
 - Publishers, financial services organisations and market research companies.
 - Computer hardware manufacturers.
 - PTTs.
 - New start-up organisations.
- The on-line database services market is showing the tendency towards becoming a highly specialised market whose needs are being met by newly emerging information companies.
- The computer and communications technology is becoming relatively less critical. The "information" and associated added-value services will become dominant.
- Specialisation and dedication will be key to sustained long-term success in this rapidly growing market.
- Joint ventures and acquisitions will be a significant feature of the market's development.

ON-LINE DATABASES - A FOCUS FOR THE FUTURE

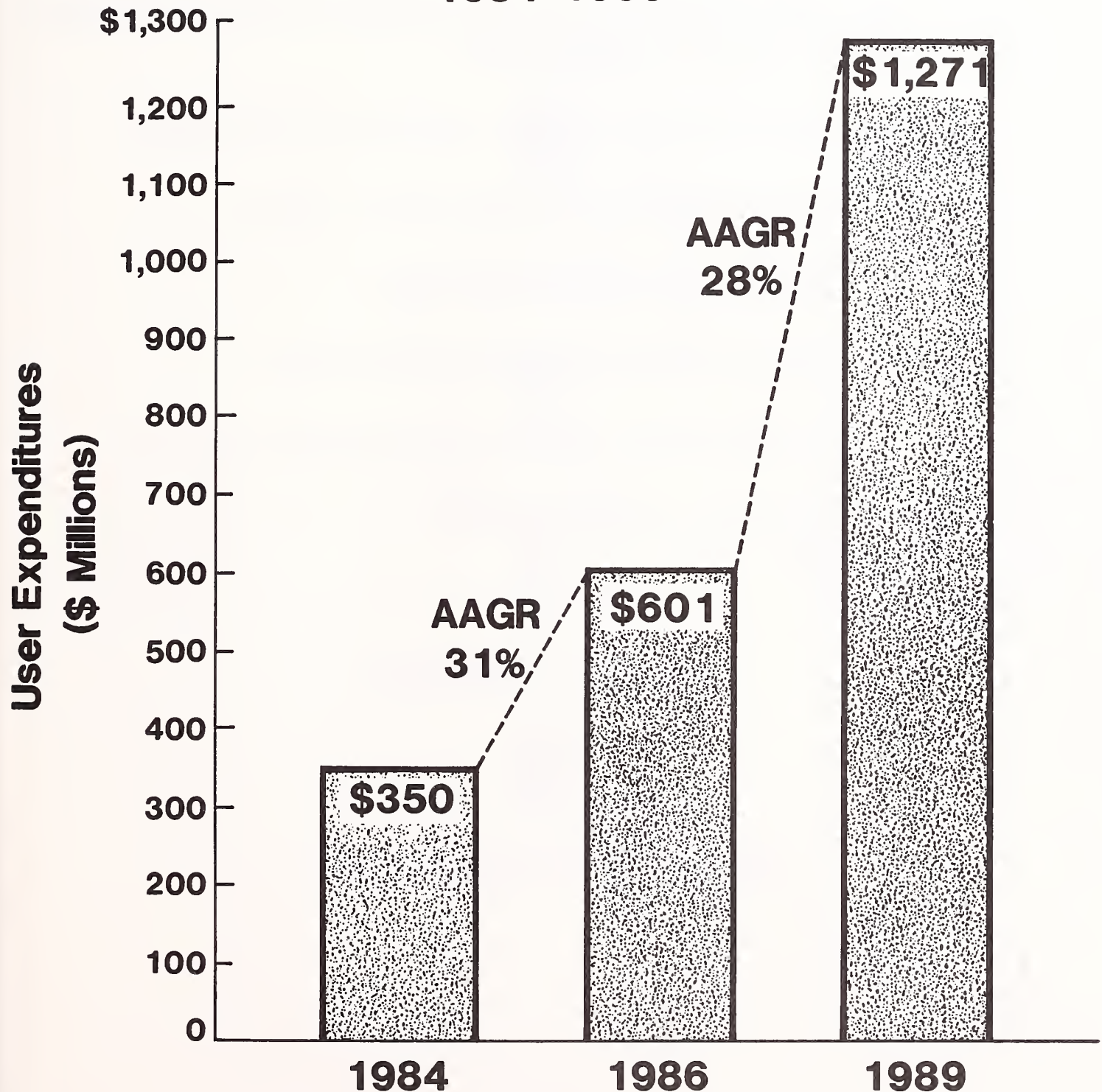


B. WESTERN EUROPEAN MARKET WILL EXCEED \$1 BILLION BY 1989

- The on-line database services market in Western Europe is growing rapidly.
- From around \$350 million in 1984, it is forecast to reach \$600 million in 1986 and exceed \$1.2 billion in 1989.
- The United Kingdom will remain the largest single-country market, primarily because of the influence of London as a world financial center.
- Italy, currently the least developed market, will grow faster than average, spurred by availability of the public packet-switched network and VIDEOTEX services during 1985.
- The Financial sector will remain the most dominant, but more rapid growth will be experienced in the marketing and business, and industry-specific sectors.
- New applications and VIDEOTEX will be prime generators of this growth, as will the increasing availability of on-line consumer market research data.

WESTERN EUROPEAN MARKET WILL EXCEED \$1 BILLION BY 1989

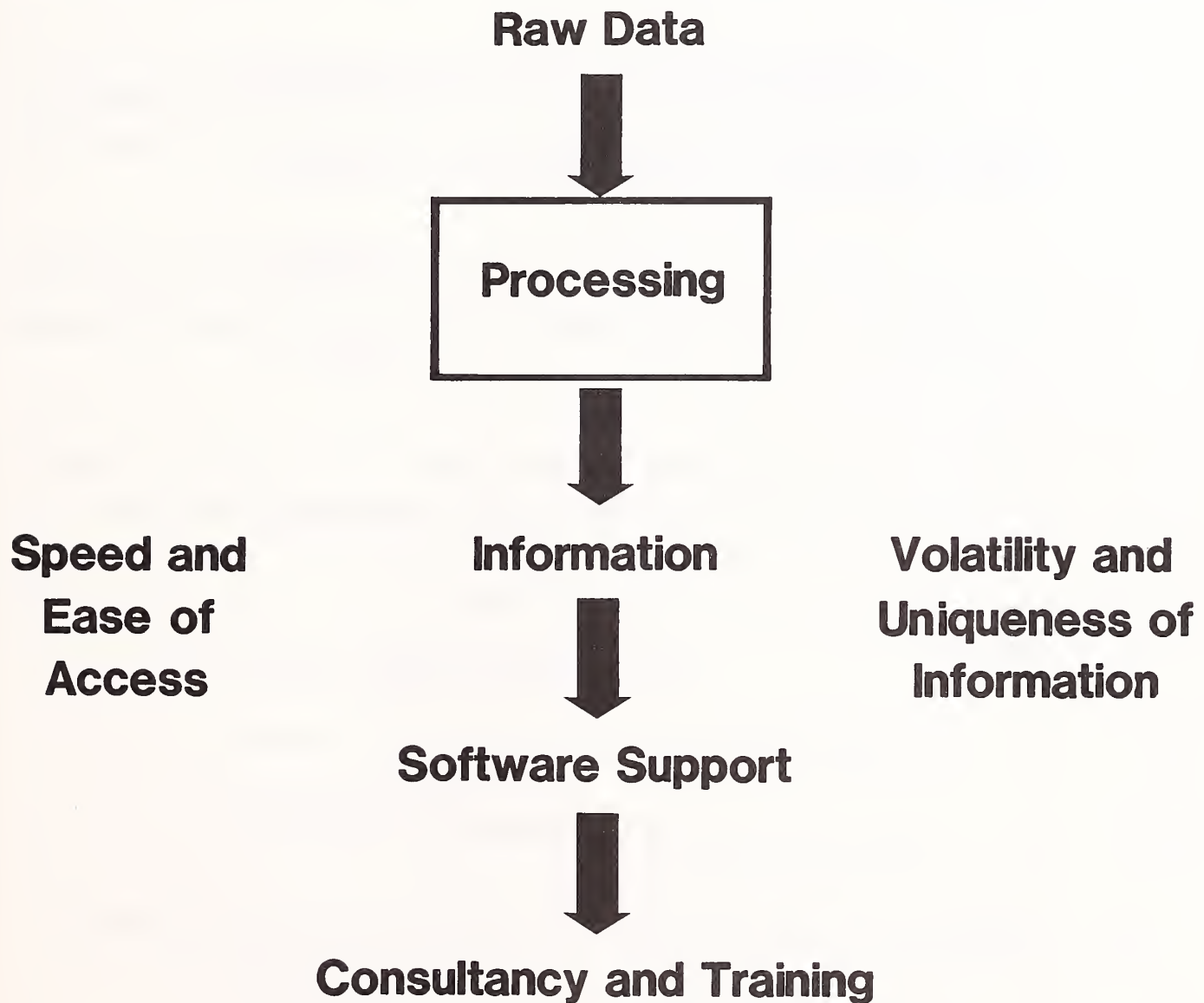
Forecast of On-Line Database Services Markets 1984-1989



C. VALUE-ADDED SERVICES—THE KEY FACTOR

- Raw or unprocessed data has low value. Processed data and the supply of additional services to augment basic on-line database offerings have high value.
- These value-added services are the key ingredients for expanding and profitable opportunities in this marketplace.
- Factors that will add value to on-line database services will include:
 - Speed and ease of access relative to extent of data.
 - Volatility and uniqueness of information.
 - Level of processing to refine data into information.
 - Provision of decision support and other software enhancements.
 - Consultancy and training services.

VALUE-ADDED SERVICES - THE KEY FACTOR



D. TECHNOLOGICAL DEVELOPMENT OPPORTUNITIES

- Technological developments and resulting cost reductions are continuing to act as important development forces for the on-line database services market.
- The increasing availability of public packet-switched networks as well as improved communications standards are leading to increasing and wider use of services.
- The impending availability of value-added networks and the development of local area networks in large organisations will also have an impact on extending the market.
- Widespread use of personal computers and the developing commercial VIDEO-TEX systems will open up new classes of users and new types of on-line database services.
- VIDEOTEX and conventional delivery modes will continue to merge, to provide a wide range of capability for these new services and new users.
- Developments in optical storage will begin to make a significant contribution through:
 - Lowered storage costs and reduction of size constraints.
 - Image storage augmentation of services.
- Software developments will become increasingly significant in providing:
 - Easier user interfaces.
 - Access to multiple hosts and databases.

TECHNOLOGICAL DEVELOPMENT OPPORTUNITIES

- **Communications Environment**
 - **Public Packet-Switched Networks**
 - **VANs**
 - **LANs**
- **Videotex**
- **Personal Computers**
- **Optical Storage**
- **Software**

E. THE MARKETS OF THE FUTURE

- New types of on-line database markets are emerging to meet the needs of completely new types of users.
- Electronic publishing will, in the immediate term, open up opportunities in both the business and financial sectors of the market.
- Increasingly, databases will be developed that directly support transactions, for example a database containing product and price information that supports the issuing of a purchase order.
- Decision-oriented databases will directly aid critical evaluations required for decision making. An example is an airline pilot requiring weather information for fuel calculations and consequent decisions on fuel load.
- The immediacy of the users' need for this information will be the key to their potential as profitable on-line database services.
- The greater that immediacy and the greater the level of service, then the higher the value to the end user.
- Database vendors will need to price in line with that value. This will be the key to profitability.
- Many more marginal markets, particularly in the electronic publishing area, will be developed successfully through subsidisation strategies, e.g., by supporting business services and advertising.

THE MARKETS OF THE FUTURE

- **Electronic Publishing**
- **Transaction-Oriented Data Bases**
- **Decision-Oriented Databases**
- **Value-Oriented Pricing Key to Profitability**
- **Subsidisation Strategies**

F. STRATEGIC DIRECTIONS

- It will become increasingly important for industry participants to control or own the databases.
- Provision of the on-line service alone is increasingly a utility business.
- The importance of value-added services and the emergence of highly specialised market sectors will emphasise marketing knowledge and approach as a key priority for success.
- Specialist "information companies" will become the most important participants in the marketplace, as a result of:
 - Controlling database ownership.
 - Specialist industry knowledge.
 - Marketing commitment.
- RCS vendors must carefully examine their long-term approach to this market. Key strategies for success will be:
 - Specialisation.
 - Acquisition or partnership.
- Paramount will be a dedication to the market and its needs.

STRATEGIC DIRECTIONS

- **Database Ownership/Control**
- **Computer Service Becoming Utility Business**
- **Added-Value Services for Specialised Market Needs**
- **“Information Companies” to Dominate**
- **RCS Vendors to Adopt Dedicated Approach**

III MARKET ANALYSIS AND FORECAST

III MARKET ANALYSIS AND FORECAST

A. MARKET DIRECTIONS

- One major trend in the advanced Western economies is towards an economy in which information is becoming an increasingly important factor in the productive system.
- One of the most significant manifestations of the developing "information economy" is the emergence of an area of economic activity that can be described as the tradeable information sector.
- One of the key constituents of that sector is the market for on-line database services. Pricing and publishing would also be important constituents.
- As the trend towards an "information economy" progresses, so consequently does this market for "tradeable information" become larger and more significant.
- On-line databases hold a vital strategic position in that marketplace. They represent an important application of information technology to business and professional life and potentially into domestic life as well.
- The on-line database market has already developed into a significant area of economic activity. INPUT estimates that the Western European market will amount to some \$350 million during 1984.

- There are many hundreds of databases available on line to users in Western Europe covering a vast range of different subjects in service and technology, business economics, law, news and financial information.
- EUSIDIC (The European Association of Information Services) publishes a database guide listing some 1,600 separate on-line databases and nearly 1,000 organisations that are concerned with database production or services.
- INPUT forecasts that the on-line database market will continue to develop rapidly, its growth fueled by:
 - A transfer of existing batch databases into on-line mode made possible by cheaper storage costs and state-of-the art DBMS technology. This is particularly likely in the consumer market research area.
 - A stronger shift towards the concept of electronic publishing for certain services, as communications costs are lowered and access equipment (e.g., terminals, personal computers) becomes more widely used and available.
 - The development of completely new areas of application such as decision support databases. The JETPLAN database, for example, supports airline pilot decisions on route planning and fuel needs.
- However, it has to be accepted that experience indicates that despite the rapid advance of technology the ability of most organisations to assimilate and use information technology products and services lags well behind the available opportunities.

- Factors that have hampered growth in the past include:
 - Relatively expensive communications costs, which have been a significant barrier to the use of remote databases.
 - Poor profitability for vendors, which has led to cautious marketing and limitations to the products and services offered.
 - The operational difficulty in using many of the services that require expert knowledge and experience to allow effective use.
- Some of the changes that are taking place and that are leading to increased on-line database use are:
 - The increasing availability of distance-independent communications (Public Packet-Switched Networks) in Europe has lowered communications costs.
 - The emergence of lower cost computer hardware and more powerful and effective software environments has lowered the effective cost of on-line computer facilities. On-line database operations are showing signs of moving towards profitability; some have already achieved it.
 - Growing awareness and familiarity with on-line database use amongst the professional users.
- Factors that are likely to prove important in further extending the potential of the on-line database market are:
 - The rapid proliferation of PCs (personal computers), leading to increased awareness of information technology and with the addition of communications ready-made access capability.

- The potential inherent in optical disk storage for reduction in relative costs and vast increases in capacity.
 - The emergence of software developments in the areas of ease of use and data management, particularly the combination of data derived from a number of different databases.
- Many of the trends outlined above are leading to on-line database services that have increasing attraction for the traditional publishing industry.
- For certain categories of data, the provision by electronic means is now becoming feasible and practical. This will result in a dramatic reduction in the time and space constraints that govern the production of many printed databases today.
- The potential is opened for direct communication between a publisher and its customers.
- A potential area of the market that has often been forecast as a major opportunity is the domestic or home user market.
- To date vendors of on-line database services have paid this area scant attention. DIALOG has, however, just announced in Europe its KNOWLEDGE INDEX service, which provides access to their databases at specially reduced prices for evening and weekend use. This service is primarily aimed at capturing the market for professionals working at home.
- In Europe the home base users have primarily been the target of VIDEOTEX systems such as PRESTEL, but acceptance has been slow. Even in France, where Government-inspired initiatives like MINITEL have aggressively promoted home use, indifference has been a major problem.

- VIDEOTEX technology was billed as a low-cost approach utilising familiar technology. In practice it has been overtaken by events. VIDEOTEX was never cheap enough, personal computers arrived on the market and their prices progressively declined. Additionally, VIDEOTEX marketing has in many cases lacked focus and direction.
- Business applications of VIDEOTEX have been developed and a number of RCS vendors (for example, BARIC) have developed successful services in this area.
- Of considerable relevance to the on-line database industry is whether the personal computer or VIDEOTEX technology will prevail.
- INPUT considers that the resolution of this conflict will be found in a gradual merging of these two approaches into a continuous function of capability from the basic to the sophisticated.

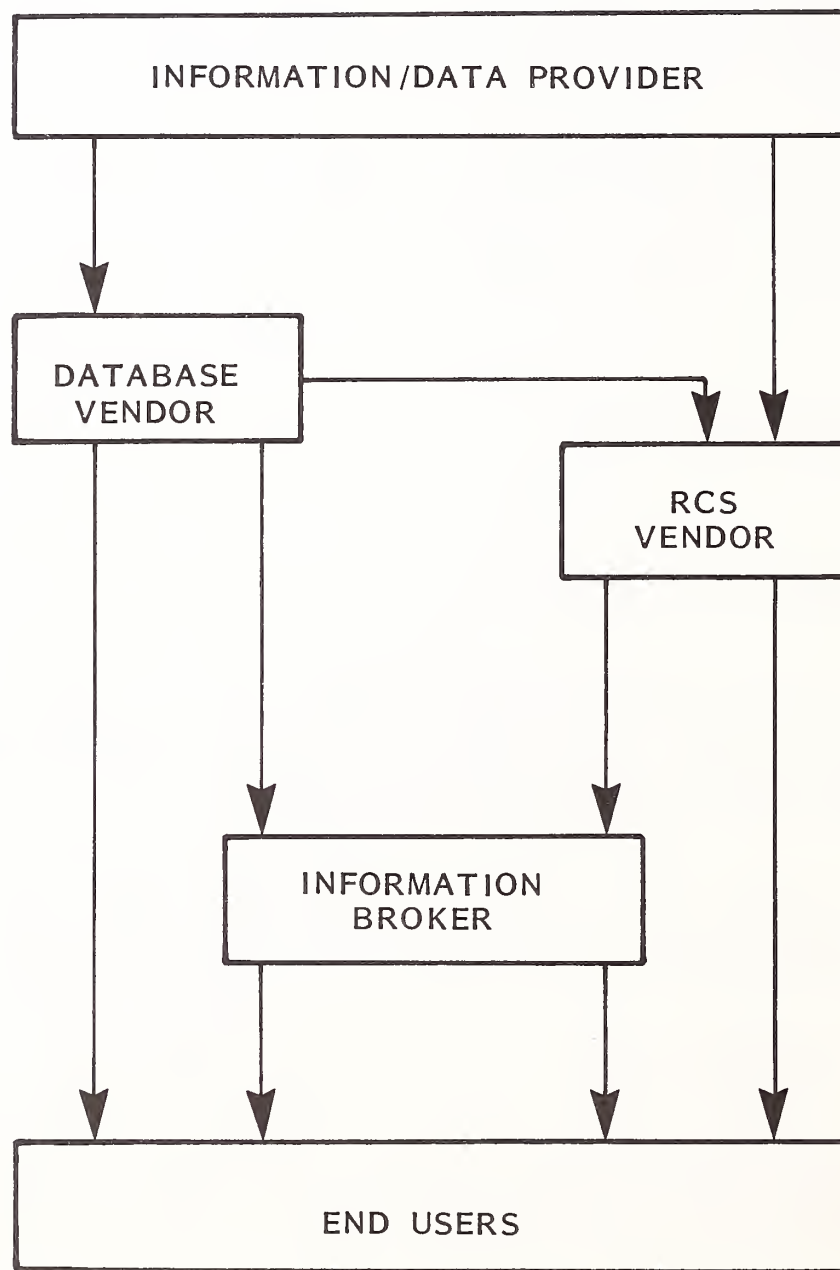
B. MARKET STRUCTURE

I. MARKET PARTICIPANTS

- The on-line database market, although simple in concept, has a complex structure in which many participant organisations fulfill a variety of single or multiple roles in a number of combinations.
- The simplified schematic shows in Exhibit III-1 is designed to show the relationship between the major components of on-line database services.
 - a. Database Vendor
- This group of participants create and maintain the database, generally as an adjunct to some kind of information service or publishing activity.

EXHIBIT III-1

ON-LINE DATABASE SERVICES MARKET STRUCTURE



- The database is usually created by key entry from the original data source, but other methods are used, for example image scanning for a full text database.
- The database vendor can offer the database to the market through an RCS vendors, but some will operate their own computer facilities and market the service directly.

b. RCS Vendor

- Most frequently the RCS vendor provides the computer facilities as the database host and markets the service on behalf of the database creator.
- In some situations the RCS vendor simply provides the computer host facilities and the database creator takes responsibility for marketing the service. Derwent's patent databases are an example of this latter approach.
- Some RCS vendors will offer on-line databases simply as one service amongst a variety of other RCS-type activities. An example is SCICON's offering of the POLIS service.
- The 51 vendors interviewed for this study included 16 RCS companies that fell into this category.
- For three of these companies an on-line database was considered as only an incidental activity.
- Some RCS companies are addressing this market in a more aggressive fashion. Four RCS companies had established separate divisions or business units directed to this marketplace; it was a full time concern for their respective managements.

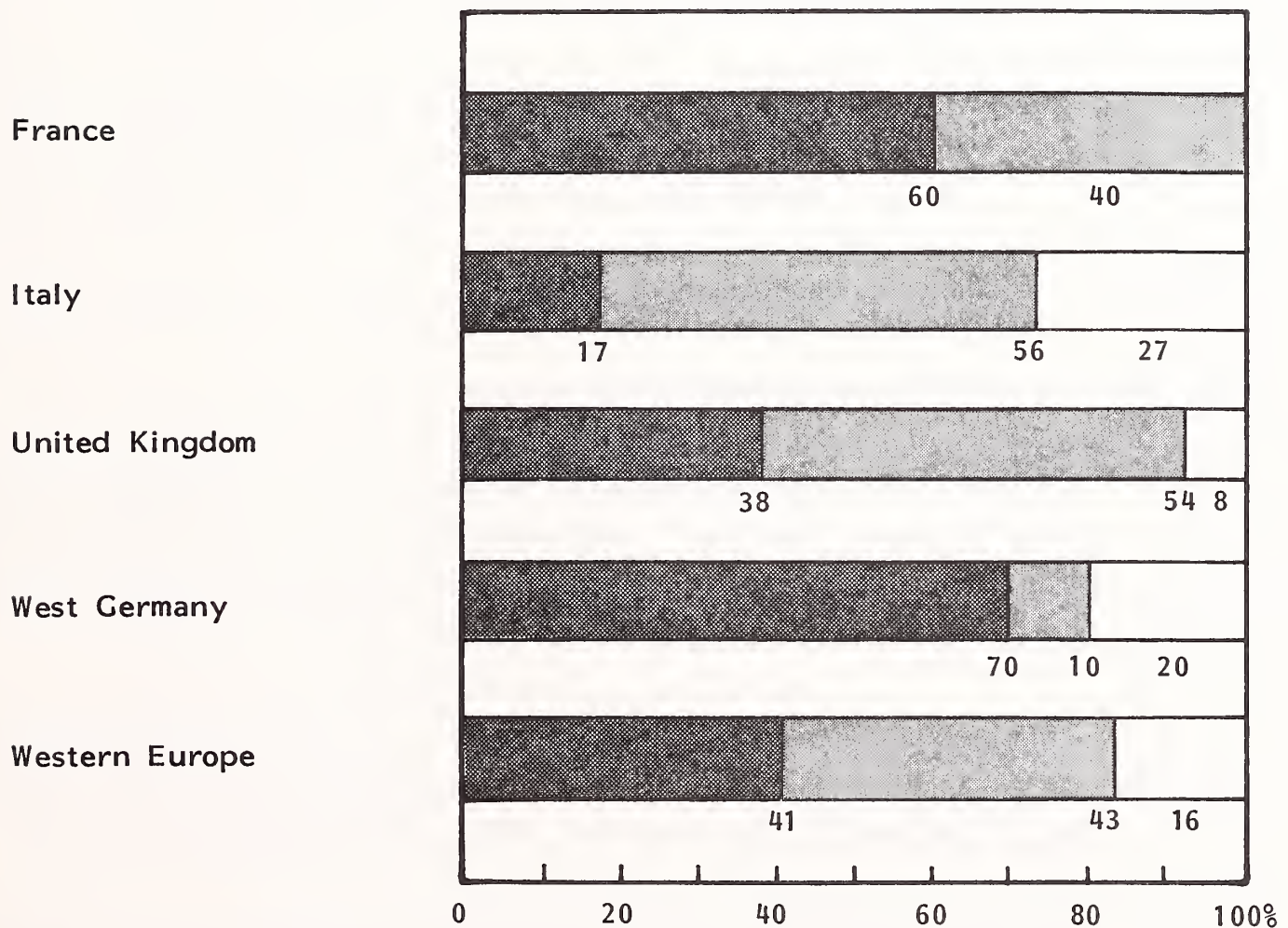
- Another category of activity is that of the specialist on-line database service. The so-called supermarket host is typical of this situation where the entire operation (including the provision of the remote computer service) is dedicated to on-line database use.
- The DIALOG AND PERGAMON-INFOLINE services are typical of this approach.

c. Information Brokers

- The information broker is an intermediary stage that sometimes exists between the database service and the end user.
- Given the difficulties of accessing some databases, particularly in the scientific and technical area and the need for expert knowledge and experience of use, the information broker can provide a useful service. The end user benefits from reduced on-line time, and a reduced number of accesses.
- A number of organisations have the specific role of information broker, but others such as libraries and chambers of commerce, particularly in France and Germany, can also fulfill this role. In-house research departments will also act in this way.
- Given the intermediary role of information brokers in the distribution channel between the service provider and the end user, it is not surprising that some hostility exists.
- As can be seen in Exhibit III-2, this hostility appears to be highest in Italy, where nearly a third of the vendors viewed information brokers as a threat to their operations.
- In contrast, there appeared to be a very positive attitude toward information brokers in France and West Germany.

EXHIBIT III-2

VENDOR ASSESSMENT OF THE ROLE OF INFORMATION BROKERS



- Important Part of Extending Use of Data Base
- Not Important
- A Threat to the Service Provider

- In general a significant proportion (41%) of the vendors interviewed saw information brokers having an important role to play in extending the use of on-line databases.

d. Other Participants

- Potentially, many other organisations have an interest in the development of the on-line database industry. Principally:
 - Governments.
 - PTTs.
 - Publishing organisations.
 - Financial institutions.
 - Computer manufacturers.
- Governments and their agencies are regulators of the environment and also major information sources. They have sought in some cases (particularly in France) to develop and influence an area of the economy that has potential strategic importance.
- PTTs have a role to play in the development of this market through the provision of the "enabling" services that are required to operate these services (e.g., Telecommunications Networks and special services like VIDEOTEX).
- Publishing organisations, as already mentioned, are in many cases the original data providers. As technological development spawns increasing integration of telecommunications, personal computers and optical recording, this area becomes of increasing importance to publishers as a distribution medium.

- The increasing threat of on-line services supplanting revenues from some traditional paper products will ensure their interest.
- Financial institutions, given their high involvement in the use of information technology and their own strong needs for information, could also become important participants. For example, CITICORP has announced its intention of becoming a major distributor of financial database services.
- Computer manufacturers are already heavily involved through their information services organisations (e.g., ICL/BARIC, CONTROL DATA).
- Further involvement is likely. For example, IBM has entered into agreements with both CBS and Merrill Lynch in the U.S., with the aim of providing home and business information services in the future.

2. MARKET SECTOR DEFINITIONS

- The on-line database services market is extensive and complex. Many different services are provided and there are a number of channels of distribution.
- INPUT has classified the Western European market on the basis of end-user interest or subject matter. The relative size of the sector was also taken into account when defining the market segmentation.
- The following eight market sectors, which are discussed below, resulted from this analysis:
 - Financial.
 - Economic/econometric.

- Marketing/business.
 - Scientific and technical.
 - Patents.
 - Industry-specific.
 - Legal.
 - News.
- The financial sector includes databases that contain:
 - Current and/or historical data concerning money markets (interest rates; current and future exchange rates).
 - Up-to-the-minute information on the prices and movements of securities and commodities.
- The economic and econometric database sector includes:
 - Econometric databases containing economic or financial data stored in time series with data frequencies ranging from weekly to annually. These databases may contain aggregate data of a historical or forecast nature.
 - Stocks, bonds and commodity databases containing historical, financial and econometric data on stocks and bonds, commodities and futures.
 - The marketing and business sector is defined as including those databases that are relevant to the marketing and planning functions of business and institutions. This includes:

- Consumer market research data.
- Demographic databases containing data from population census surveys.
- Business abstracts containing references to articles or publications of primarily business interest.
- Data for checking commercial credit.
- Scientific and technical databases are primarily bibliographic, containing references or abstracts of published work in the various scientific and technical disciplines. Databases referencing grey literature (for example, doctoral theses, conference proceedings, etc.) are also included.
- Patents databases have been separately identified from legal databases because of their relative size and importance within the industry.
- The industry-specific sector covers all databases, not otherwise categorised in the scientific and technical area, which are primarily used by specific industries or trade groups. Included in this sector are databases relating to:
 - Chemical properties.
 - Pharmaceuticals.
 - Petrochemicals.
 - Resources.
 - Building and construction.
 - Agriculture.

- Legal bibliographic databases (excluding patents, which are separately defined) cover:
 - Legislative/executive law.
 - Jurisprudence.
 - Notarial/accountancy law.
- News databases are either abstracted or full-text versions of newspapers, magazines or news services, relating to general, political and business news.

C. MARKET FORECAST

I. FORECAST DEFINITION

- The market forecast was developed from a detailed analysis and evaluation of current and projected activities in each of the four countries studied.
- For each country market the eight market subsectors defined in the previous section were analysed.
- The forecast covers:
 - Short-term growth anticipated in each subsector for the period 1984 to 1986.
 - A projection of longer term growth in the period 1986-1989.
- The total market is defined in this report as the sum of end-user expenditures for on-line database services, but excluding communications costs.

- Revenues generated by VIDEOTEX services were included in each market subsector where the service provided was considered to be a "business-related" public service providing on-line access to stored data. Consumer VIDEOTEX services were excluded.
- All market data are given in U.S. dollars to aid in comparison of market size and growth between the four Western European countries and the U.S.
- The forecast was developed from individual country subsector forecasts calculated in local currency and converted to U.S. dollars at constant 1984 exchange rates. The exchange rates used were as defined in Chapter I.

2. WESTERN EUROPEAN MARKET FORECAST

- INPUT forecasts that the on-line database market in Western Europe will grow from \$350 million in 1984 to \$601 million in 1986. This represents an overall annual average growth (AAGR) of just under 31%.
- In the longer term INPUT forecasts that between 1986 and 1989 these markets will continue to grow at an annual average growth of 28% to reach \$1,271 million in 1989.
- Exhibit III-3 shows the breakdown of market size and growth for each of the four individual country markets.
- An analysis of the eight separately defined market sectors, defined in section 2 above, is shown graphically in Exhibit III-4.
- Exhibits III-5 and III-6 show, respectively, country market growth comparisons and market sector comparisons through to 1989.

EXHIBIT III-3

FORECAST OF ON-LINE DATABASE SERVICES MARKET
BY COUNTRY, 1984-1986

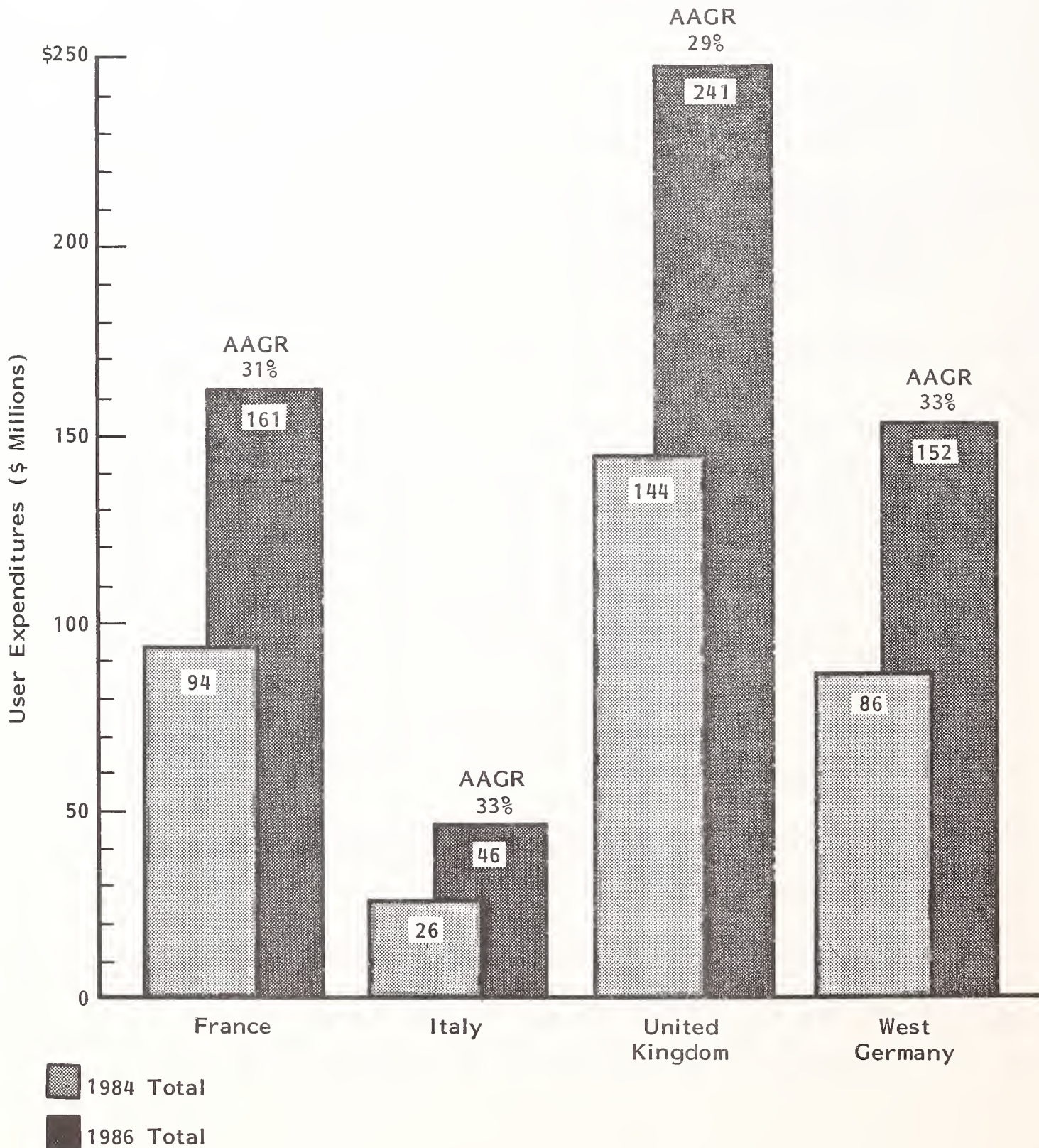


EXHIBIT III-4

FORECAST OF ON-LINE DATABASE SERVICES MARKET BY MARKET SECTOR, 1984-1986

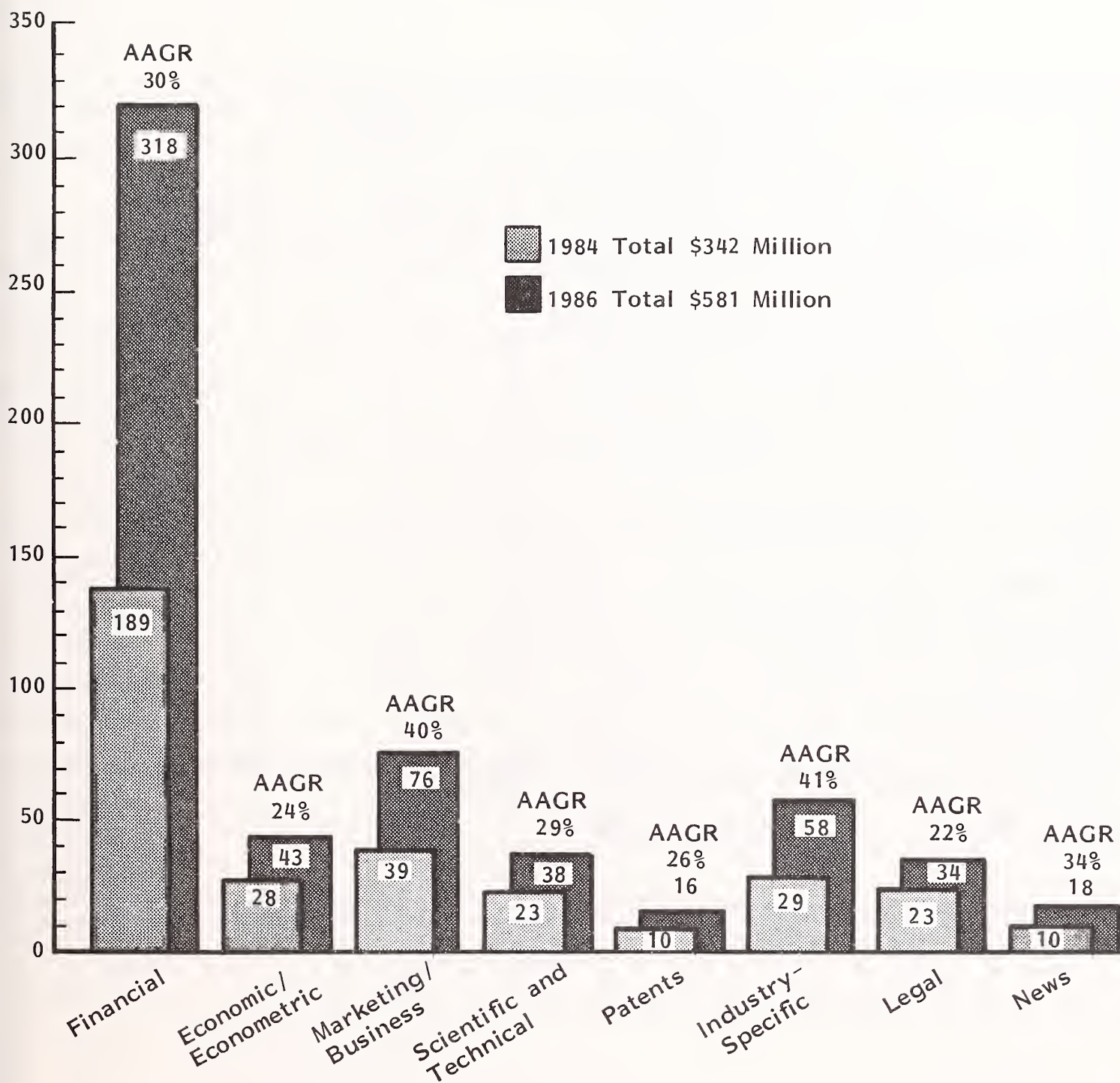


EXHIBIT III-5

COMPARISON OF ON-LINE DATABASE SERVICES MARKETS BY COUNTRY IN WESTERN EUROPE 1983-1989

COUNTRY	\$ Million					
	1983	1984	1983/1986 AAGR	1986	1986/1989 AAGR	1989
France	\$ 73.6	\$ 94.0	30%	\$161.2	28%	\$ 341.8
Italy	20.2	25.8	32	46.5	35	113.5
United Kingdom	111.8	144.2	29	240.6	26	479.6
West Germany	64.5	86.1	33	152.3	30	336.2
Total	\$270.1	\$350.1	31%	\$600.6	28%	\$1,271.1

EXHIBIT III-6

MARKET SECTORS COMPARISON OF ON-LINE DATABASE SERVICES IN WESTERN EUROPE 1983-1989

MARKET SUBSECTOR	(\$ MILLIONS)					
	1983	1984	1983-1986 AAGR	1986	1986-1989 AAGR	1989
Financial	\$145.2	\$189.2	30%	\$317.9	24%	\$612.8
Economic/Econometric	21.7	27.5	25	42.6	26.5	86.3
Marketing/Business	29.4	39.3	37	76.4	34.5	186.2
Scientific and Technical	17.7	22.6	29	37.9	27	78.0
Patents	7.7	9.8	27	15.9	26.5	32.2
Industry Specific	21.5	28.9	39	58.1	42	166.4
Legal	19.5	23.3	20	34.1	22	62.4
News	7.4	9.5	34	17.7	38	46.8
Total	\$270.1	\$350.1	30.5%	\$600.6	28%	\$1,271.1

- This longer term forecast is tentative. It is highly likely that the market will become radically restructured in that time frame as a result of completely new product offerings and newly emerging technological capabilities.
- For example, it is possible that electronic publishing may develop the market at a higher rate than forecast. INPUT believes that considerable caution should be shown by vendors when considering such issues, and market resistance should be thoroughly evaluated in line with experience to date.
- Nevertheless this longer term forecast does provide information services vendors with an appreciation of the enormous potential available in this marketplace.
- As can be seen from Exhibits III-3 and III-5, the U.K. represents the largest individual country market and will maintain this position through 1986 to 1989.
- Italy is the smallest and least developed of the four markets, but is likely to grow at a faster rate.
- The market sector forecasts shown in Exhibit III-4 and III-6 clearly identify the financial sector as remaining the most dominant, with marketing and business databases the second largest sector.
- Considerable growth in this latter sector is anticipated as a result of the realisation of on-line database access to the large consumer market research data banks.
- Both the marketing and business sector and the industry-specific sector will grow at a higher rate than the overall market, as a result of VIDEOTEX-type services offering on-line data line access facilities.

- There will be a blurring of the distinction between conventional on-line access and VIDEOTEX systems in this period.
- The development of each separate country market in relation to this forecast is discussed in the sections below.

a. French Market Development

- Aggressive investment in on-line database services by consortia or joint ventures backed by government sponsorship have been an important factor in the development of the French market.
- As the government subsidisation ends, some uncertainty is being experienced by French vendors still needing to experience further substantial growth in order to bring their operations into profit.
- Another key feature of the French market is the importance and emphasis placed on VIDEOTEX services largely as a result of government initiatives. This, albeit in many cases indirectly, is having a growth effect on the demand for on-line database services.
- The French market is anticipated to expand at an average annual rate of 30% up to 1986, and then at the slightly slower rate of just under 29% up to 1989. This can be seen from Exhibit III-7.
- The relatively high profile of VIDEOTEX services in France is likely to lead to higher than average growth in the market sectors where VIDEOTEX systems will have the highest impact, that is, in:
 - Marketing/Business.
 - Industry-specific sectors.

EXHIBIT III-7

MARKET FORECAST FOR ON-LINE DATABASE SERVICES IN FRANCE 1984-1989

MARKET SUBSECTOR	(\$ MILLIONS)					
	1983	1984	1983-1986 AAGR	1986	1986-1989 AAGR	1989
Financial	\$27.3	\$34.1	26%	\$54.3	20.5%	\$95.3
Economic/Econometric	7.2	9.1	27	14.8	27	30.6
Marketing/Business	12.2	15.9	33	28.9	31	65.1
Scientific and Technical	6.2	7.8	28	13.1	29	28.1
Patents	2.5	3.1	25	4.9	26	9.8
Industry-Specific	10.0	13.5	39	27.1	39	72.6
Legal	5.9	7.5	27	12.2	27.5	25.4
News	2.3	3.0	37	5.9	36	14.9
Total	\$73.6	\$94.0	30%	\$161.2	28.5%	\$341.8

- Certainly the development of on-line selection and ordering database systems based on VIDEOTEX will be strongest in France.
- The relatively lower acceptance of personal computers in comparison to the U.K. is a factor that is responsible for holding back demand in some sectors, for example, in patents and economic/econometric databases.
- It is the relative size of the financial markets that affects France's overall position in Western Europe.
- With many large and sophisticated RCS suppliers and continued government interest, the French market has the potential for high growth, providing that full-service, added-value products can be developed and brought to market.

b. Italian Market Development

- The Italian market for on-line database services is the smallest of the four principal country markets analyzed in this report.
- Factors that have particularly hindered the growth of the Italian market include:
 - The poor telecommunications environment in terms of facilities and high costs.
 - A relatively undeveloped RCS industry.
- Exhibit III-8 shows that in 1984 the Italian market will only achieve a level of around \$25 million, under one-quarter the size of the U.K. market.
- However, higher than average growth of nearly 32% per annum is expected to expand the market to well over \$40 million by 1986 and to nearly \$113 million by 1989.

EXHIBIT III-8

MARKET FORECAST FOR ON-LINE DATABASE SERVICES
IN ITALY
1984-1989

MARKET SUBSECTOR	(\$ MILLIONS)					
	1983	1984	1983-1986 AAGR	1986	1986-1989 AAGR	1989
Financial	\$5.4	\$7.0	31%	\$12.2	36.5%	\$31.0
Economic/Econometric	1.1	1.4	28	2.3	34.5	5.6
Marketing/Business	2.8	5.0	63	12.1	33.5	28.8
Scientific and Technical	2.4	3.0	33.5	5.7	34	13.8
Patents	0.3	0.4	38.5	0.8	38	2.1
Industry-Specific	0.8	1.0	65	3.6	65	16.2
Legal	7.2	7.7	8	9.1	10	12.1
News	0.2	0.3	52	0.7	77	3.9
Total	\$20.2	\$25.8	32%	\$46.5	35%	\$113.5

- Changes are anticipated in the communications area that are likely to have a significant effect on the development of the market. These are:
 - ITAPAC, the Italian public packet-switched network service, is likely to be available during the first half of 1985.
 - VIDEOTEL, the Italian VIDEOTEX system, is anticipated to be available by the end of 1984.
- Availability of a good communications infrastructure is a necessary condition for the widespread use of on-line database services. Consequently these telecommunications developments are viewed as a positive force for market growth.
- Improvements to general RCS capabilities will also help condition more users to the availability of these services.
- VIDEOTEL will, similarly, open up new areas of opportunity in the marketing/business and industry-specific sectors.
- These will be important factors in a market where today user acceptance of on-line database services is generally very low.
- An important factor in the Italian market is the relatively high incidence of captive revenues that contribute to overall user expenditures for on-line database services.
- This primarily takes the form of the provision, by professional bodies, of on-line database facilities as part of an annual subscription for other services. An example is CERVED, which provides business services on behalf of various Chambers of Commerce.

- Although the above tends to increase potential interest and use of on-line databases, it can also have an adverse effect since it conditions users to an unrealistically low price environment.
- It is unclear, at this stage of the Italian market's development, how these captive revenues will affect future developments.
- Some impact on the market may also be felt from ESA's likely decision to abandon its commercial role and operate on a basis of subsidy by the EEC, but only offering EEC services.
- Key market sectors for growth in the Italian market will be:
 - Financial.
 - Marketing/business.
 - Scientific and technical.
- The above three sectors, as the largest growth opportunities, will be vital to whether the Italian on-line database market catches up with the other major-country markets in Western Europe.

c. United Kingdom Market Development

- The United Kingdom is the largest single-country market in Western Europe, at nearly \$150 million in 1984, and is likely to retain that position into the foreseeable future.
- The principal reason for the U.K.'s preeminent position is the presence of London as one of the world's leading financial centres and the resulting size of the market generated for on-line database services in that sector.

- There is no doubt that the ease with which U.K. users can access U.S.-based "English-language" databases has also made a contribution.
- The U.K. market forecast analysed by market subsector is shown in Exhibit III-9.
- Overall growth averaging 30% per annum will lift the market to just under a quarter of a billion dollars in 1986. A lower rate of growth (26%) is likely to take the market to around \$480 million by 1989.
- These growth rates will be achieved in nearly all sectors, with particularly high growth in the following:
 - Marketing/business.
 - Industry-specific.
 - News.
- Moves by major market research organisations to make available consumer market research data on-line during this period will be a major growth factor for the marketing and business sector.
- Increased use of VIDEOTEX systems for specific business uses will also contribute, albeit from a relatively low base, to growth in the industry-specific sector.
- The widespread acceptance of the personal computer and the interest created by British Telecom's PRESTEL VIDEOTEX service are causing much greater awareness of on-line database opportunities for users and are a factor in this growth picture.

EXHIBIT III-9

MARKET FORECAST FOR ON-LINE DATABASE SERVICES IN THE UNITED KINGDOM 1984-1989

MARKET SUBSECTOR	(\$ MILLIONS)					
	1983	1984	1983-1986 AAGR	1986	1986-1989 AAGR	1989
Financial	\$ 77.9	\$ 99.7	27.5%	\$161.7	21.5%	\$290.7
Economic/Econometric	6.6	8.4	23.5	12.4	24.0	23.6
Marketing/Business	7.9	10.3	39.0	21.1	41.5	59.8
Scientific and Technical	3.9	5.3	32.0	8.9	23.5	16.7
Patents	2.3	3.0	30.5	5.1	25.0	9.9
Industry-Specific	6.9	9.3	35.5	17.2	42.0	49.1
Legal	3.5	4.4	26.0	7.0	23.0	13.0
News	2.8	3.8	37.0	7.2	32.5	16.8
Total	\$111.8	\$144.2	29.0%	\$240.6	26.0%	\$479.6

- The market for business news services appears to be growing rapidly in the U.K. as wider use alerts business users to VIDEOTEX's inherent advantages and benefits. This remains, though, a relatively small sector, as service cost levels are still too high to attract more marginal users.
- A general factor that is helping to develop the market in all sectors is the widespread availability of British Telecom's Packet-Switch Stream public packet-switched network and the generally much improved communications environment that is now enjoyed by U.K. users.

d. West German Market Development

- The Federal Government's relative failure to achieve widespread use of sponsored on-line database services through its information and documentation programme and the relatively underdeveloped state of RCS services in West Germany have been major reasons for lack of market development.
- The market has, largely as a result of these policies, been dominated by bibliographic services, which in overall Western European terms have represented the smallest sectors.
- Restrictive PTT policies and relatively high communications costs have also been responsible for slow market growth.
- Exhibit III-10 shows the five-year forecast for the West German market.
- This market is now developing at a higher rate, in line with the whole Western European market.
- Numeric databases will show considerable growth as the market demand catches up with its European rivals.

EXHIBIT III-10

MARKET FORECAST FOR ON-LINE DATABASE SERVICES
IN WEST GERMANY
1984-1989

MARKET SUBSECTOR	(\$ MILLIONS)					
	1983	1984	1983-1986 AAGR	1986	1986-1989 AAGR	1989
Financial	\$34.6	\$48.4	37.5%	\$ 89.7	30.0%	\$195.8
Economic/Econometric	6.8	8.6	24.5	13.1	26.5	26.5
Marketing/Business	6.5	8.1	30.0	14.3	31.5	32.5
Scientific and Technical	5.2	6.5	25.0	10.2	25.0	19.9
Patents	2.6	3.3	25.0	5.1	25.0	9.9
Industry-Specific	3.8	5.1	39.0	10.2	41.0	28.5
Legal	2.9	3.7	26.0	5.8	27.0	11.9
News	2.1	2.4	23.0	3.9	42.0	11.2
Total	\$64.5	\$86.1	33.0%	\$152.3	30.0%	\$336.2

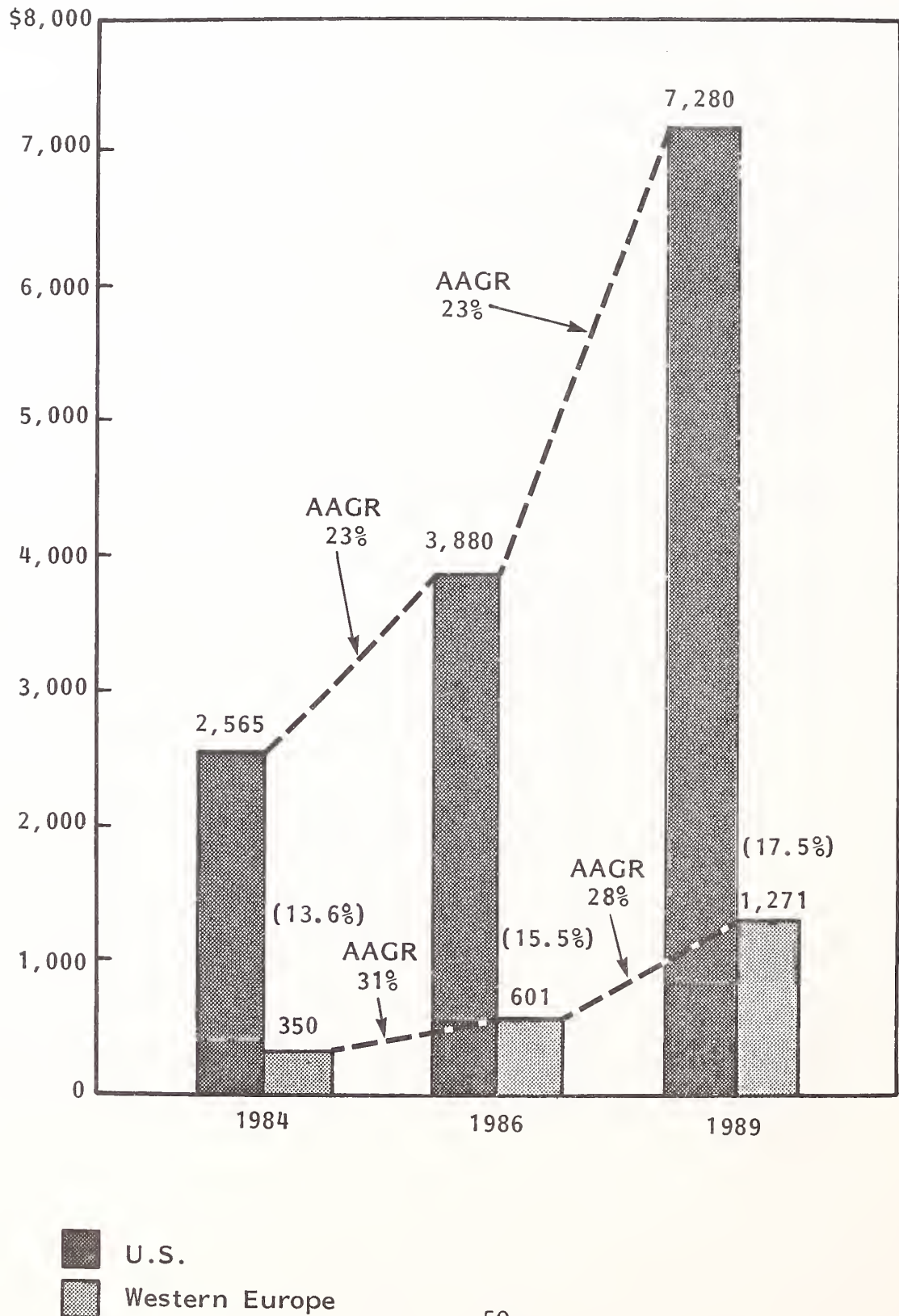
- Sectors that are likely to show particularly good growth are:
 - Financial.
 - Economic/Econometric.
 - Marketing/Business.
 - Industry-specific.
- The availability of BILDSCHIRMTEXT is likely to spur further interest, but relatively low acceptance of PCs and restrictive telecommunications policies will not allow the market to achieve its full potential.
- The rapidly expanding banking sector will be the principal feature leading to overall growth in this market.

3. COMPARISON WITH THE UNITED STATES

- The development of on-line database services has always been that much more advanced in the U.S. than in Western Europe. Some fundamental reasons for this, as with RCS markets in general, are:
 - Very large unified market.
 - Lower computing and telecommunications costs.
 - Greater acceptance and availability of information technology.
- Exhibit III-II provides a comparison between the United States and the Western European market. The recent adverse declines in European currency exchange rates against the U.S. dollar should be taken into account in this comparison.

EXHIBIT III-11

COMPARISON OF U.S. AND WESTERN EUROPE ON-LINE DATABASE MARKET DEVELOPMENT, 1984-1989



- In 1984 it is anticipated that the U.S. market will be over seven times larger than the combined market size of France, Italy, the U.K. and West Germany.
- Higher growth in the period 1984 to 1986 in Europe (at 31% per annum compared to the U.S. rate of 23%) will reduce the multiple to six and a half by 1986.
- In the period to 1989 it is forecast that the Western European markets will maintain higher growth than that of the U.S. market, 28% versus 23%, reducing the multiple to under six.

IV STRATEGIC ISSUES AND DEVELOPMENTS

IV STRATEGIC ISSUES AND DEVELOPMENTS

- The information technology industry continues to advance rapidly as a result of technological developments, many of which have strategic significance for the on-line database market.
- Additionally, as information technology becomes more imbedded in the economic infrastructure, increasing attention must be paid to societal issues such as data privacy regulation and the role of trade unions.
- Key developments and issues of strategic significance to the on-line database market examined in this chapter are:
 - The development of the communications environment in Europe.
 - Relevant technological developments.
 - Societal issues that could affect the development of the on-line database market.

A. THE COMMUNICATIONS ENVIRONMENT

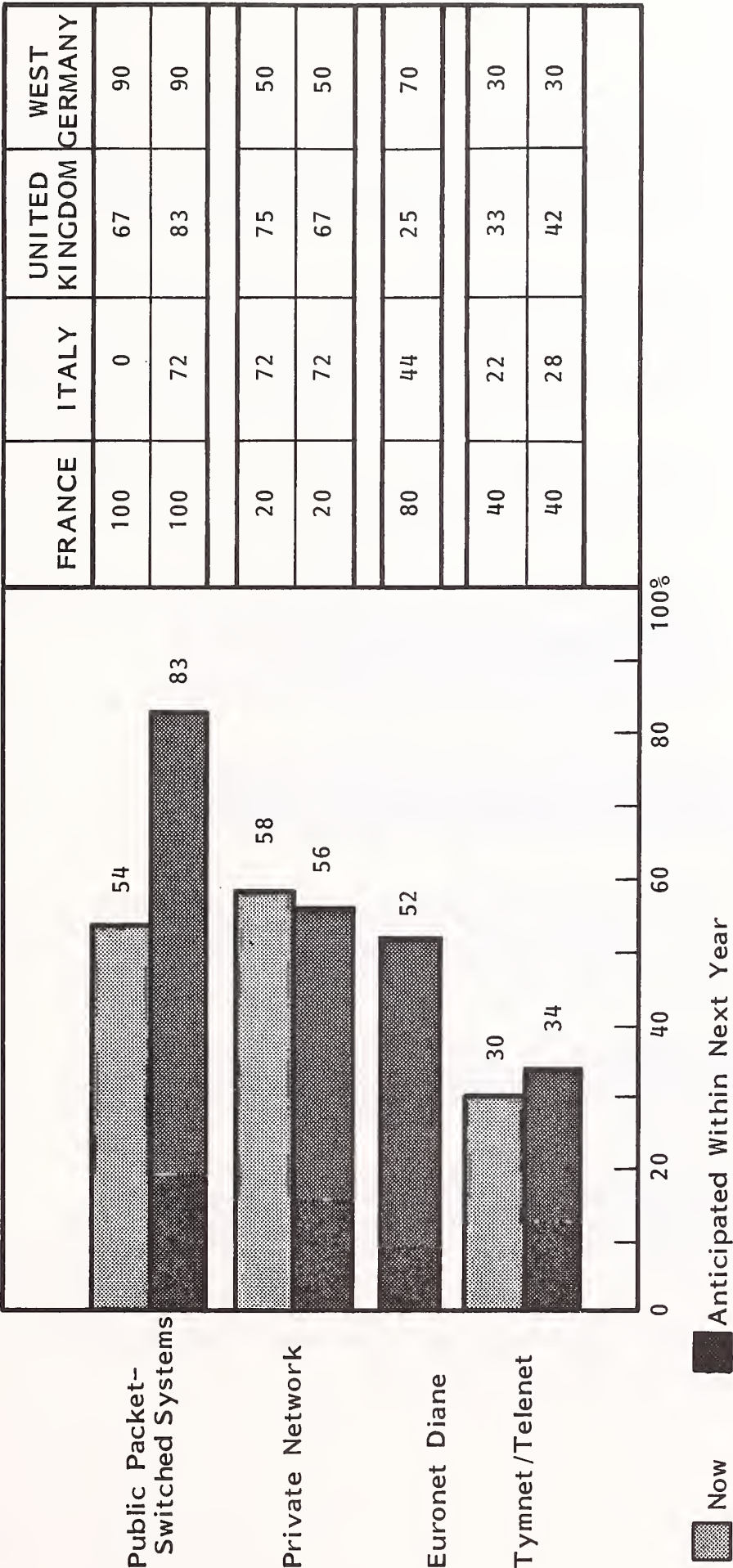
- The telecommunications link is vital to the provision of on-line services. The accessibility, cost and service level of communications facilities are an important strategic factor.

- Key communications issues discussed in this section include:
 - Packet-switched networks.
 - Local area networks.
 - Communication service standards.

I. PUBLIC PACKET-SWITCHED NETWORKS

- The availability of public packet-switched network services has been one of the most powerful factors in developing the market for on-line database services.
- One French vendor described TRANSPAC as having been fundamental to the development of the on-line database market in France. He considered that it was the cause of accelerating growth in the use of these services.
- Another French vendor claimed that 90% of its accesses were made via TRANSPAC.
- The importance of public packet-switched networks to the on-line database market is illustrated by Exhibit IV-1.
- This Exhibit shows the various types of communications links that are used to access the vendors' databases. Shown are the situation today and the anticipated changes in the next year.
- Use of public packet-switched networks is likely to increase from 54% to 83%; they will become the most popular means of using on-line database services. Private network use is expected to decline marginally.

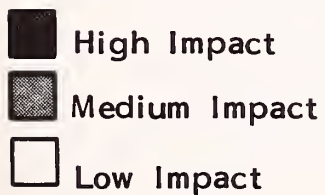
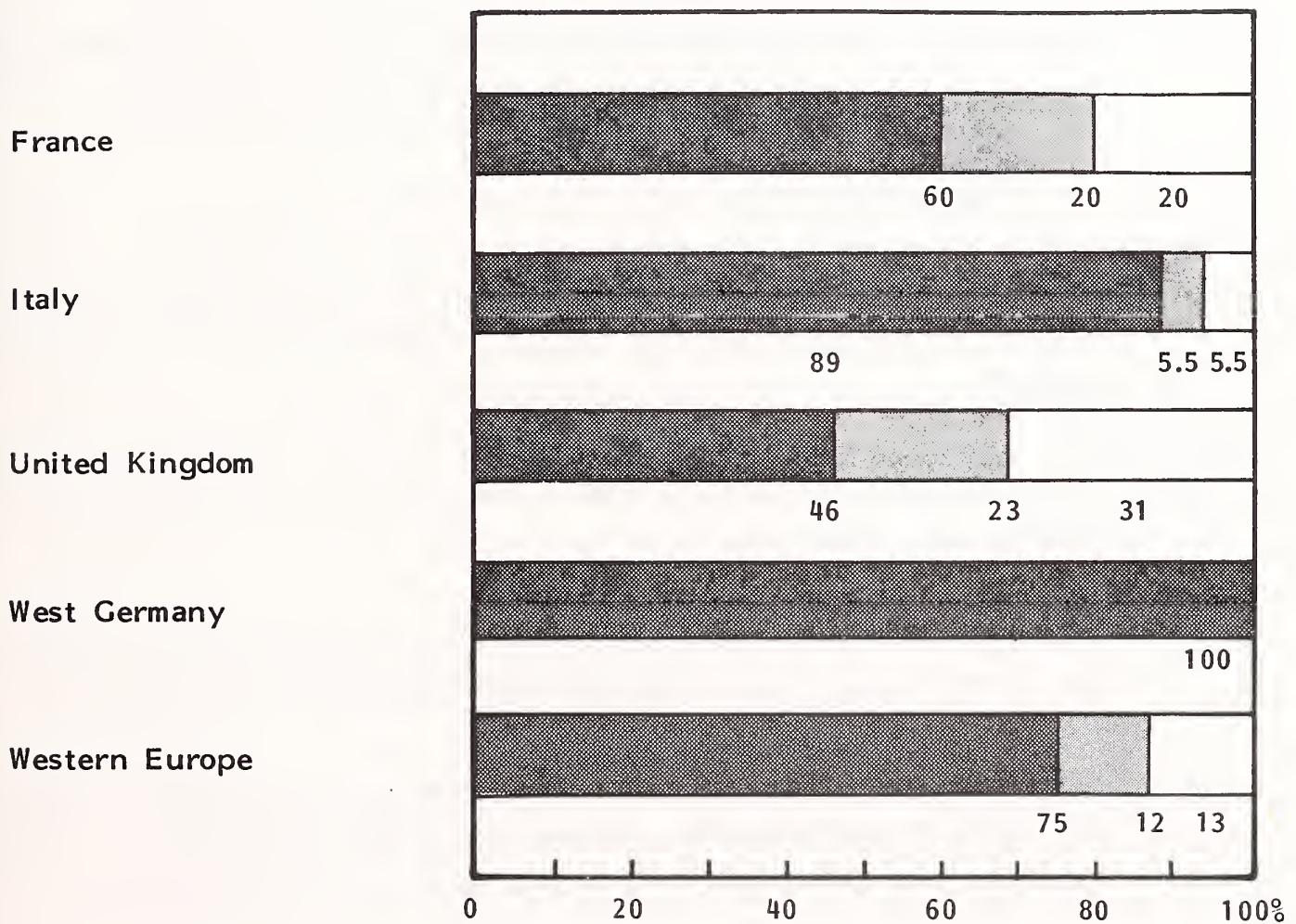
TYPES OF COMMUNICATIONS USE



- The percentage growth in the use of public packet-switched networks can be attributed primarily to the anticipated introduction of a service in Italy in 1985 and secondly to increased acceptance within the U.K. market.
- Exhibit IV-2 shows a summary of the vendors' assessment of the impact that public packet-switched services are having on the development of the on-line database market.
- Clearly the introduction of these services has had and will continue to have a high impact on the development of the market.
- The two key aspects of these services that are significant to the increasing use of on-line database services are:
 - Distance independence.
 - Relative cost.
- While the distance-independent nature of packet-switched services has clearly served to generate increasing access to remote databases, there is still some concern over relatively high pricing levels in Europe.
- The communications tariffs are therefore of concern. They probably need to be made even more attractive to stimulate an order-of-magnitude change in market penetration.
- In the U.K., British Telecom has announced the Multistream service, which may help to improve this situation. Based on OSI principles, Multistream is intended to simplify and make more widely available access and availability to the packet-switched system.

EXHIBIT IV-2

VENDOR ASSESSMENT OF IMPACT OF PUBLIC PACKET-SWITCHED SERVICES



2. PRIVATE COMMUNICATIONS NETWORKS AND VANs.

- As can be seen in Exhibit IV-1, three other methods of on-line communications are widely available for accessing databases:
 - Private networks.
 - TYMNET and TELENET.
 - Euronet Diane.
- The U.S.-based Value-Added Networks (VANs) TYMNET and TELENET are available for communication with U.S.-based users of European hosts.
 - a. Private Networks
- Private communications networks have been an important adjunct to many vendors' processing services, for example, GEISCO's MARK III Network and CISINET.
- These networks have typically been of star configuration and provided local nodes for ease of user access.
- The development of public packet-switched services referred to above has considerably reduced the need and emphasis being placed on such networks.
- However, there are various opinions on this subject. Some vendors feel that the rapidly improving quality and cost profile of communications in some European countries has greatly diminished the need for private networks.
- Other vendors, however, consider that more specialised networks services are still required to best meet on-line database user needs.

- In any event, increasing efficiency and lowered cost profiles are likely to de-emphasize the benefits of running independent networks.

b. Value-Added Networks

- One of the by-products of the move towards greater telecommunications liberalisation (particularly in the U.K.) is the development of private value-added network (VAN) services.
- In the U.K. the precise definition of a VAN has been left deliberately vague. A new definition of the VANs license is, however, due to be published by the third quarter of 1984. Broadly speaking, the VANs license permits the provision of services (via the telecommunications network) to third parties.
- The principal condition on those services is that they do not simply imply the transmission of data from point to point. Some kind of processing, albeit transmission code translation, must take place.
- Few of the vendors interviewed placed much emphasis on private VANs in respect of their potential impact on the on-line database market. One vendor commented that it would in the end depend very much upon the particular services that are offered.
- ICL in the U.K., for example, is proceeding with the development of a packet-switched VAN based on AT&T's Net/1000 technology.
- Already ICL has a contract with the Article Numbering Association for downloading daily sales information from retail outlets to regional or national sites.
- Another development is JANET, the Joint Academic Network, again in the U.K. This private service, scheduled to go live towards the end of 1984, will provide a zero-cost communications link for university users to services like BLAISE.

- Linkage with local area networks (LANs) (see Section 3 below) could be an important step in making on-line database services more widely available to managers and professionals in large organisations.
- Clearly VANS could potentially have an impact on the market for on-line database services, particularly in new application areas like commerce, medical systems and VIDEOTEX systems.

c. Euronet-Diane

- The importance of distance-independent communications for stimulating wider use of on-line databases was recognised at an early stage. This was one of the factors that led to the establishment of Euronet-Diane in 1980.
- This inter-European packet-switching network was intended to establish an infrastructure necessary for an information network linking a series of hosts in various community countries offering databases internationally.
- The life of the Euronet-Diane network was limited to 1985 and was designed to cover the period during which packet-switched national networks were established.
- Most vendors felt that Euronet-Diane had been originally helpful in establishing operator on-line database use but had naturally been superseded as national networks were established, except in Italy where the ITAPAC system is not due to go live until 1985.
- Euronet Diane is still actively used for the Scandinavian countries. Finland, for example, has only recently been connected to the system.
- Euronet Diane is still engaged in further initiatives designed to advance on-line database use. These are:

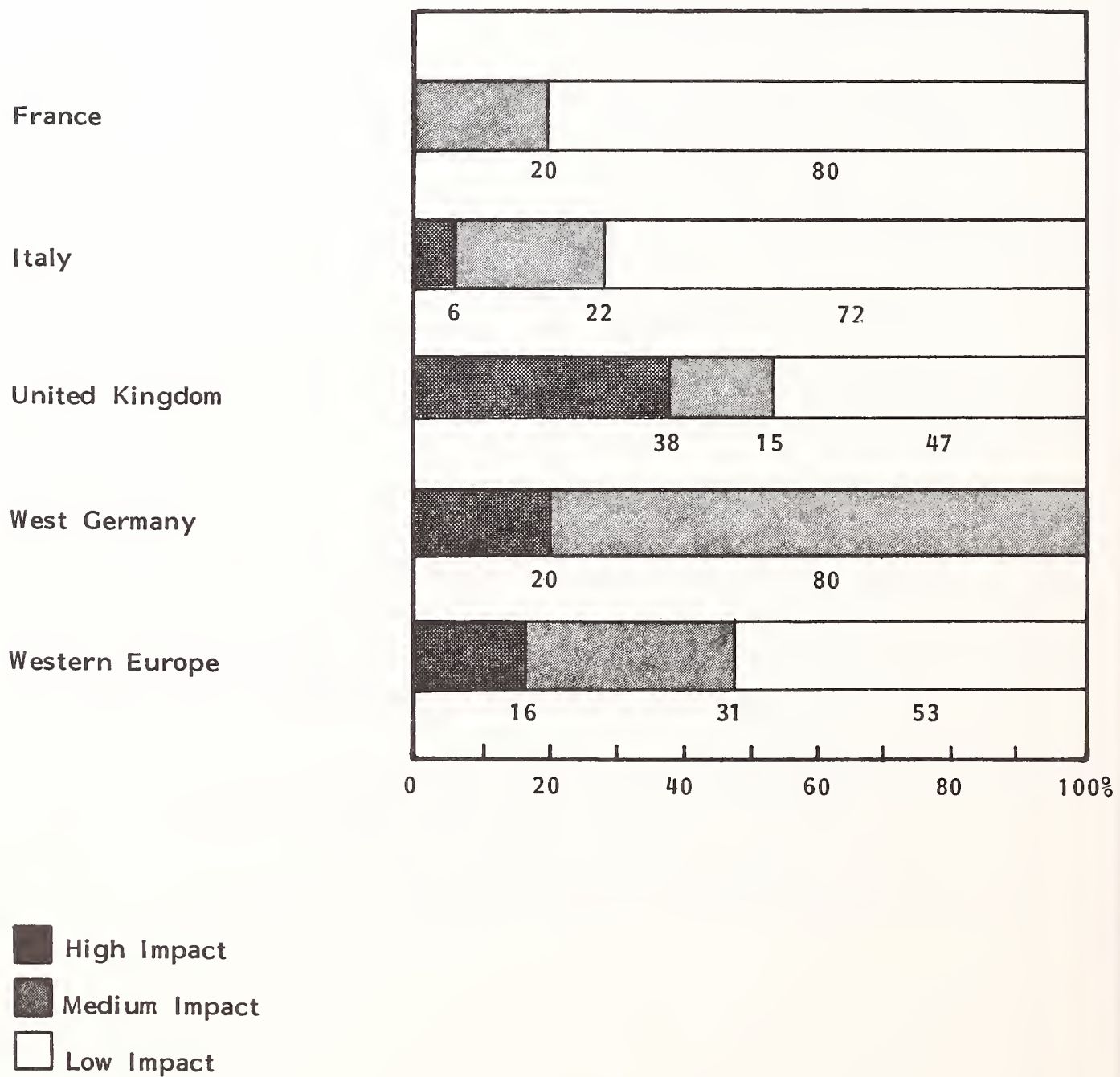
- A centralized billing facility.
 - One-stop host.
 - Common command language.
- It is too early to comment on these developments but many vendors are skeptical of their practical outcome and real benefits.

3. LOCAL AREA NETWORKS

- Local Area Networks (LANs) are one of the most widely discussed issues in the computer industry today. However, few vendors rated them as likely to have a high impact on the on-line database market; this is illustrated in Exhibit IV-3.
- Overall, only 16% of vendors rated LANs as an issue of high importance. This covered a range of relatively high interest in the U.K. (38%), as compared to 0% in France.
- A major factor behind this lack of interest is the nonavailability of LAN standards, the nonappearance to date of an IBM LAN announcement to legitimise the market, and the limited availability and capability of products.
- This generally low rating of LANs seems to be at odds with their potential for opening up a wider range of on-line data base users, particularly within large corporate accounts.
- With LANs well established in large corporations, the opportunity will exist for on-line data bases to be connected to them.

EXHIBIT IV-3

VENDOR ASSESSMENT OF IMPACT OF LOCAL AREA NETWORKS



- This would result in very much larger numbers of potential users having access to on-line database services. Another barrier to use would be removed.

4. COMMUNICATIONS ISSUES

- Effective communications facilities are an essential element of successful on-line database use. Three key issues in the communications area that could represent barriers to development of the industry are:

- Standards.
- Quality.
- Costs.

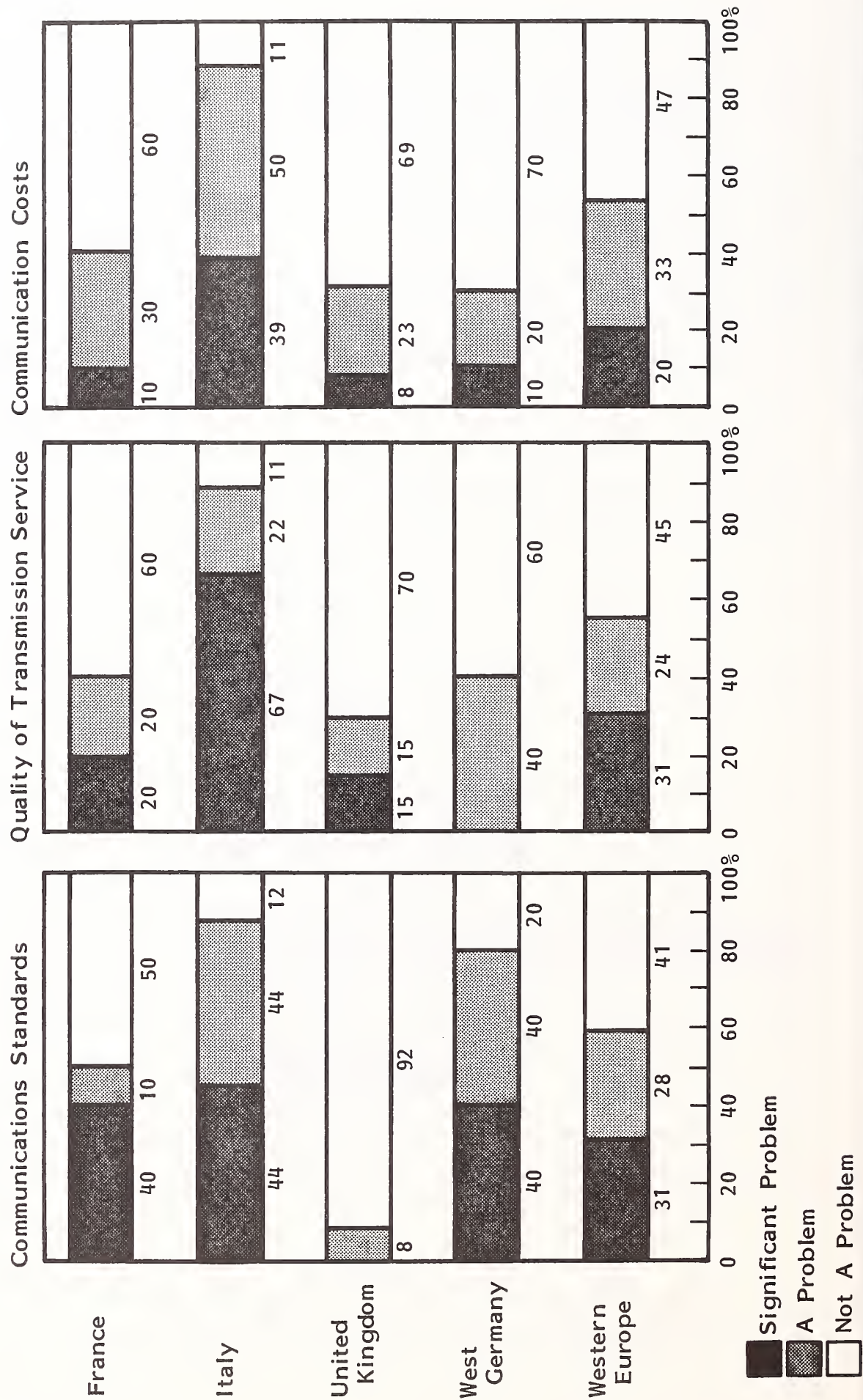
- Vendor assessment of these as potential problems are summarised in Exhibit IV-4. Each area is discussed in turn below.

a. Communications Standards

- As can be seen from Exhibit IV-4, communications standards, or rather the lack of them, are not considered a significant problem by the majority of vendors.
- Nevertheless a considerable proportion rated the problem as significant, particularly in France, Italy and West Germany.
- One area singled out for particular mention was VIDEOTEX, where European market development beyond the country boundary is restricted because of competing standards.
- Many vendors felt that the on-line database services market will only become really successful when it becomes truly international.

EXHIBIT IV-4

VENDOR ASSESSMENT OF POTENTIAL COMMUNICATIONS PROBLEMS



- To achieve that end, standards will be important. There are still many problems and these appear to relate very much to the attitudes of the PTTs.
- The better the agreement on communications standards between the European PTTs, the easier it will be for communications users. Easier communications must benefit the on-line database market.
- Thus while not an overriding problem, greater market development could be achieved with more agreements in this area. The development of satellite communications systems and further growth of X25-based packet-switched services may help the progress of standards.

b. Quality of Communications Facilities

- Clearly the availability of good-quality communications facilities is an important factor for on-line database services.
- Vendors were mostly happy that communications quality was adequate and this is reflected in the vendor attitudes summarised in Exhibit IV-4. Italy, however, was a clear exception to this, with two thirds of all vendors noting this as a significant problem.
- The situation is, however, patchy. Quality has been improved but areas of particular notoriety exist, vendors being able to cite a number of black spots.
 - As well as Italy, Ireland and Belgium were singled out as being particularly bad in respect of communications quality.
 - West German vendors were particularly critical of some of the restrictions placed on communications facilities by the Bundespost. The necessity of using "non-state-of-the-art" modems at the Bundespost's insistence was mentioned as being a particular problem.

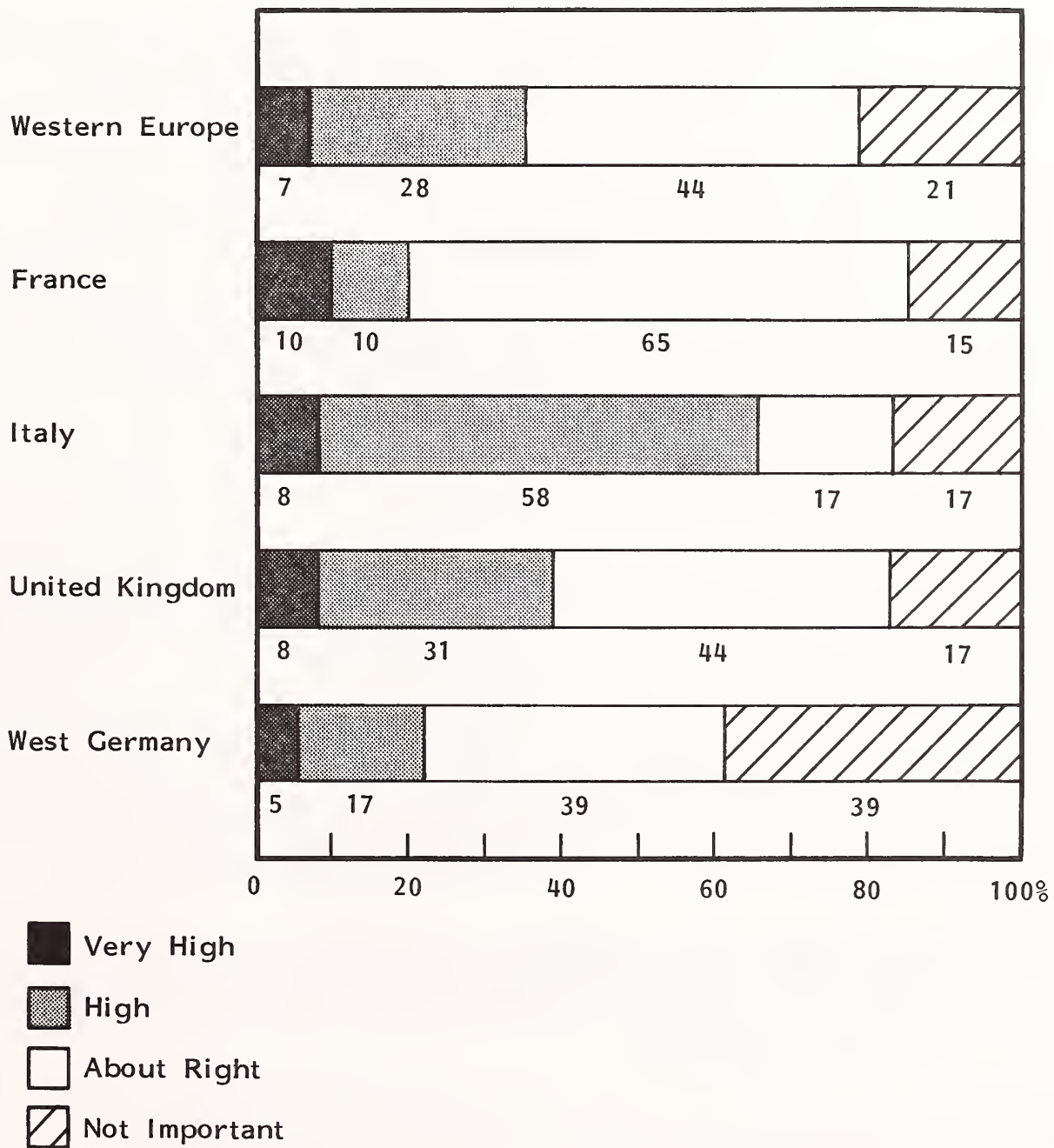
- As a result of general telecommunications user discontent in the Federal Republic, the EEC is challenging the Bundespost on this and other issues.

c. Communications Costs

- A decline in the cost of communications facilities for on-line database access has been experienced with the widespread availability of packet-switched networks.
- The exception to this is Italy. The analysis in Exhibit IV-4 shows that it is only in Italy that a significant proportion of the vendors interviewed rated communication costs as a significant problem.
- Within Europe communications costs are clearly much more acceptable now. Problems are encountered on an international scale outside Europe. This is a problem in encouraging and developing the export market in such areas as the Middle and Far East.
- The users concurred with the vendors on this issue. The analysis in Exhibit IV-5 shows that, even including the Italian sample, 44% of all users judged communications costs to be about right.
- The comment was made by one vendor that communications costs may look expensive to new users when they have yet to appreciate the value of the service. This of course is an important issue in respect of further development of the market.
- It should also be marked that a number of vendors commented that although communications costs can be considered reasonable at the moment, communications price increases would not be helpful to market development.

EXHIBIT IV-5

USER ASSESSMENT OF COMMUNICATIONS COSTS



B. TECHNOLOGY IMPACT

- A number of technological developments are likely to have a high level of impact on the development of the on-line database services market.
- This section describes vendor attitudes and approaches towards these developments. These are:
 - The rapid growth of PCs (personal computers).
 - Continuing declines in data storage costs.
 - Videodisk and image-processing systems.
- Exhibit IV-6 tabulates the overall vendor assessment of the importance of these technological trends on the development of this market.

I. THE PC CHALLENGE

- More and more personal computers are being used by professional staff. As a result, increasing numbers of professionals are gaining an increasing awareness of computers.
- This is creating potential new users of on-line database services. Database access thus becomes another function that is more readily available. In the words of one vendor, "it makes it easier to become a user."
- Further, the more comprehensive the facilities offered, for example the inclusion of a modem as a normal part of the delivered PC package, the easier awareness will become.

- The emerging quasi-commodity nature of personal computer hardware leads to a narrowing of the market for specialised terminals except where very particular needs are encountered.
- Exhibit IV-6 shows that the vast majority of vendors are placing high emphasis on the shift from dedicated terminals to personal computers. Only 8% of vendors rated this issue as of low importance.
- A number of on-line databases are currently available only on special terminals supplied by the service vendor.
- Some of these vendors are rethinking this approach and considering the enhancement of their service through personal-computer-type systems.
- Another factor influencing the move towards the use of PCs for on-line database access is the trend towards more local processing on extracted data.
- An example of this would be extracting relevant data from an econometric database and then using a spreadsheet package such as Lotus 123 to manipulate the data.
- Clearly PCs possess this multifunctionality, but in the view of some vendors PCs will need to offer higher quality graphics before PC use becomes really widespread. Certainly the industry trend is in this direction.
- Further insight into the vendor attitudes towards PCs can be obtained from the comments included in Exhibit IV-7.
- The manipulation of data extracted from an on-line database is highly dependent on the provision of private database services.
- Exhibit IV-8 shows that this was an area of high interest to vendors, but markedly more so for in-house use, as opposed to services offered on the host system.

EXHIBIT IV-6

VENDOR ASSESSMENT OF IMPACT
OF TECHNOLOGICAL TRENDS

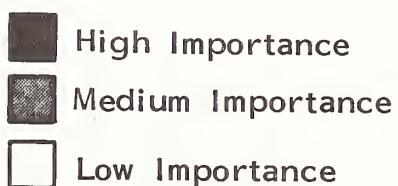
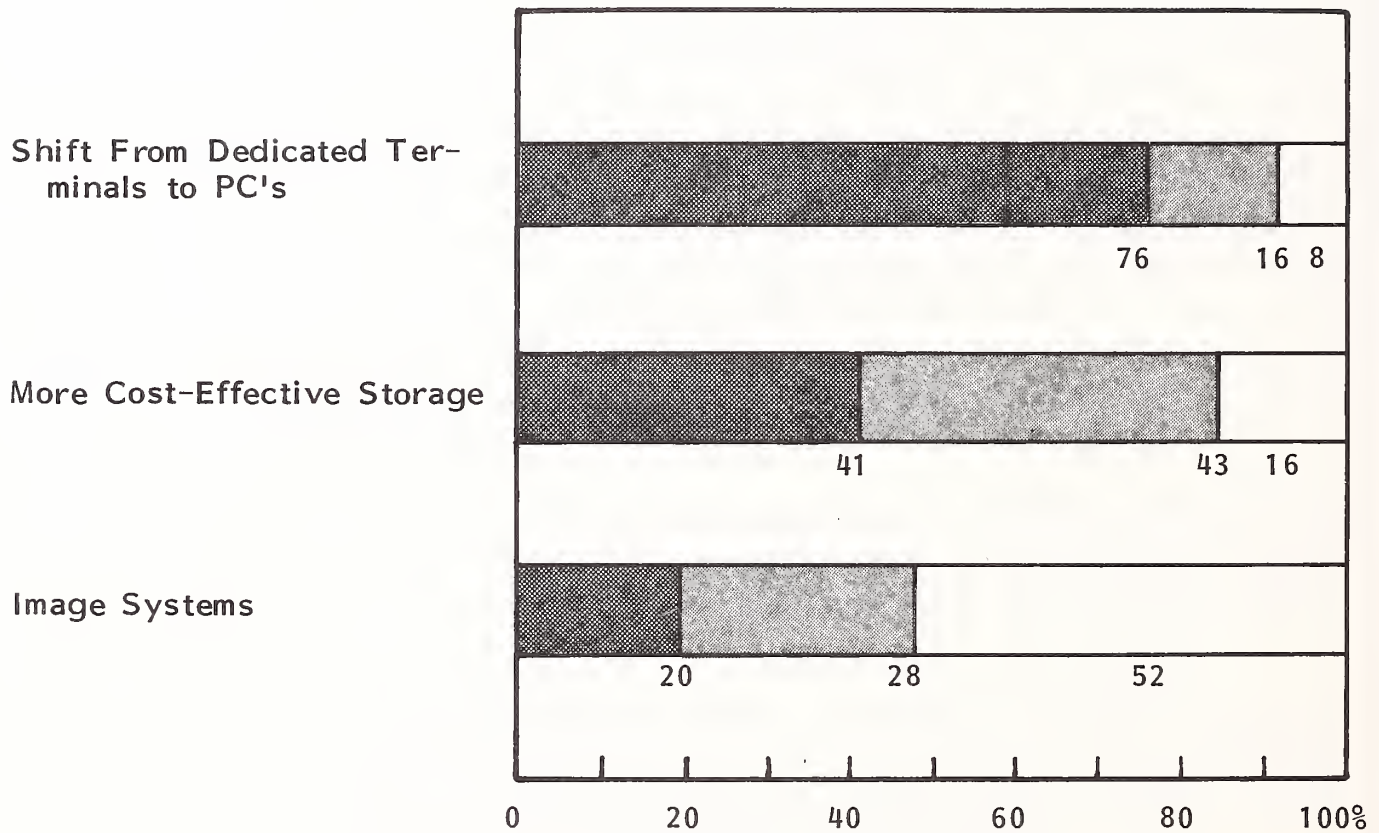


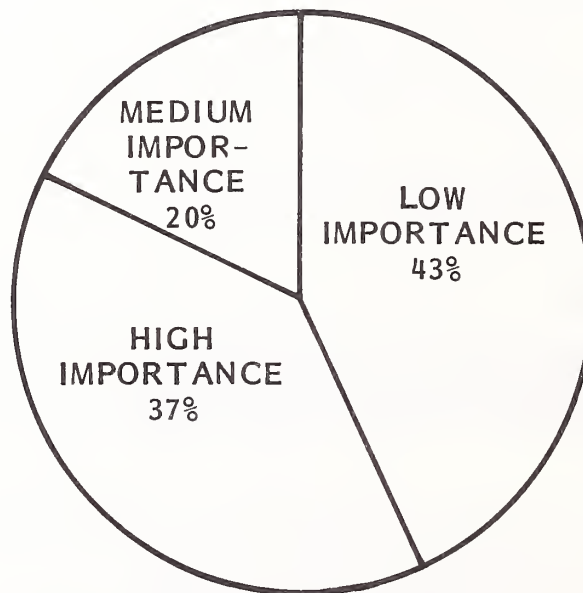
EXHIBIT IV-7

VENDOR COMMENTS ON THE IMPACT OF PERSONAL COMPUTERS

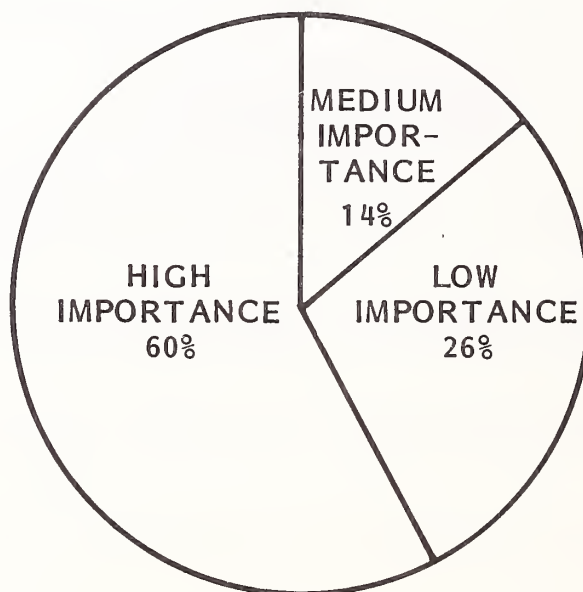
- We are very much against dedicated terminals; devices must be multi-functional.
- Makes it easier to become a user of our service.
- More and more people are using micros - database access is another function and this opens up an important potential market.
- Not for our everyday researching - doesn't improve it - but it does develop the market in other areas.
- PCs are used more and more by professionals - the problems lie in the interface.
- Fundamental to do local calculations and manipulations for numeric databases.
- Very important opportunity area.
- A necessity for the professional market - user needs calculation capability but also specialized facilities for database interrogation.
- The technical influence is overestimated but the PC will create new demand and is a technical help.
- Useful for the distribution of information to more in-house users.

EXHIBIT IV-8

VENDOR ATTITUDES TOWARDS THE
DEVELOPMENT OF PRIVATE DATABASE SERVICES



ON HOST SYSTEM



ON IN-HOUSE SYSTEM

- As can be seen from Exhibit V-4 in Chapter V, users rated in-house private database services slightly higher than did the vendors.
- There is still some considerable reserve, on the part of vendors, to this kind of development. Product packaging and pricing issues have yet to be fully developed.
- Another important area of development is specialised PC software that creates an easier-to-use interface to the end user.
- The In-Search system, available on IBM PCs for use with the DIALOG service, is an example of this kind of software and is discussed in Section 4 below.

2. DATABASE STORAGE COSTS

- The continuing decline in data storage costs has been an important factor in the development of the on-line database market.
- Exhibit IV-6 shows that 41% of the vendors interviewed considered it an issue of high importance, 43% rated it as medium importance and 16% considered it of low importance.
- The need for more cost-effective storage is conditioned by the type and size of database service that is operated.
- Vendors who operate off-line tape-based databases await the right combination of storage costs and consequent service cost levels, before converting to on-line access where appropriate.
- Further declines in relative cost levels will also place more emphasis on full-text services.

- A further reason is that for some services data storage costs do not represent a very high percentage of the overall costs of running their service.
- Some indication of the variety of attitudes found amongst vendors on the subject of on-line storage costs can be gauged from the range of comments included in Exhibit IV-9.
- Recent product introductions from manufacturers have often been delayed while technical snags have been dealt with. As a result the user community is somewhat sceptical about new storage announcements and their availability.
- Nevertheless it is clear that further declines in storage costs (probably through the implementation of optical storage techniques, which are discussed below) can spur further development in the on-line database industry.
- Over time, increased archiving requirements will make new storage technologies attractive as vendor needs become increasingly critical.
- Continued declines in relative storage costs will also make full-text rather than abstracted databases more viable.
- Exhibit IV-10 shows the pattern of vendor opinion on the issue of full-text versus abstracted databases. Some 16% rated a move towards full-text as being of high importance and a further 22% rated it as of medium importance.
- In contrast some 25% considered full-text databases to be of low importance. For 37% it was not a relevant issue because these vendors were largely providers of numeric databases.
- Other than the economics of on-line storage costs, there are many reasons for providing abstracted services.

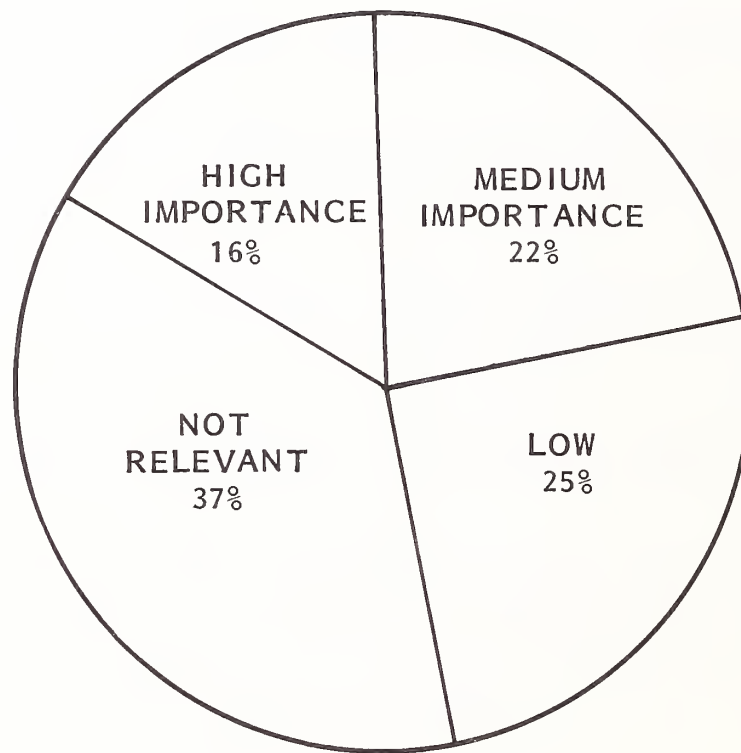
EXHIBIT IV-9

VENDOR COMMENTS ON THE NEED FOR MORE COST-EFFECTIVE STORAGE

- Important for full-text databases, which need high storage capacity.
- Could have a big impact in the library world, where many databases are tape based for off-line researching - will leap-frog to optical storage.
- Critical issue for us; we have more storage than most other vendors - always have databases on-line all the time.
- Anything that can reduce costs to users will be beneficial.
- Not a problem at the moment; perhaps it would be for storing just raw data.
- Current costs are low enough (i.e. 3380's), but in 10 years will have need for larger archives and will thus need more cost-effective storage.
- Already low - only minimal percentage of our costs.

EXHIBIT IV-10

VENDOR ATTITUDES TOWARDS FULL-TEXT
VERSUS ABSTRACTED DATABASES

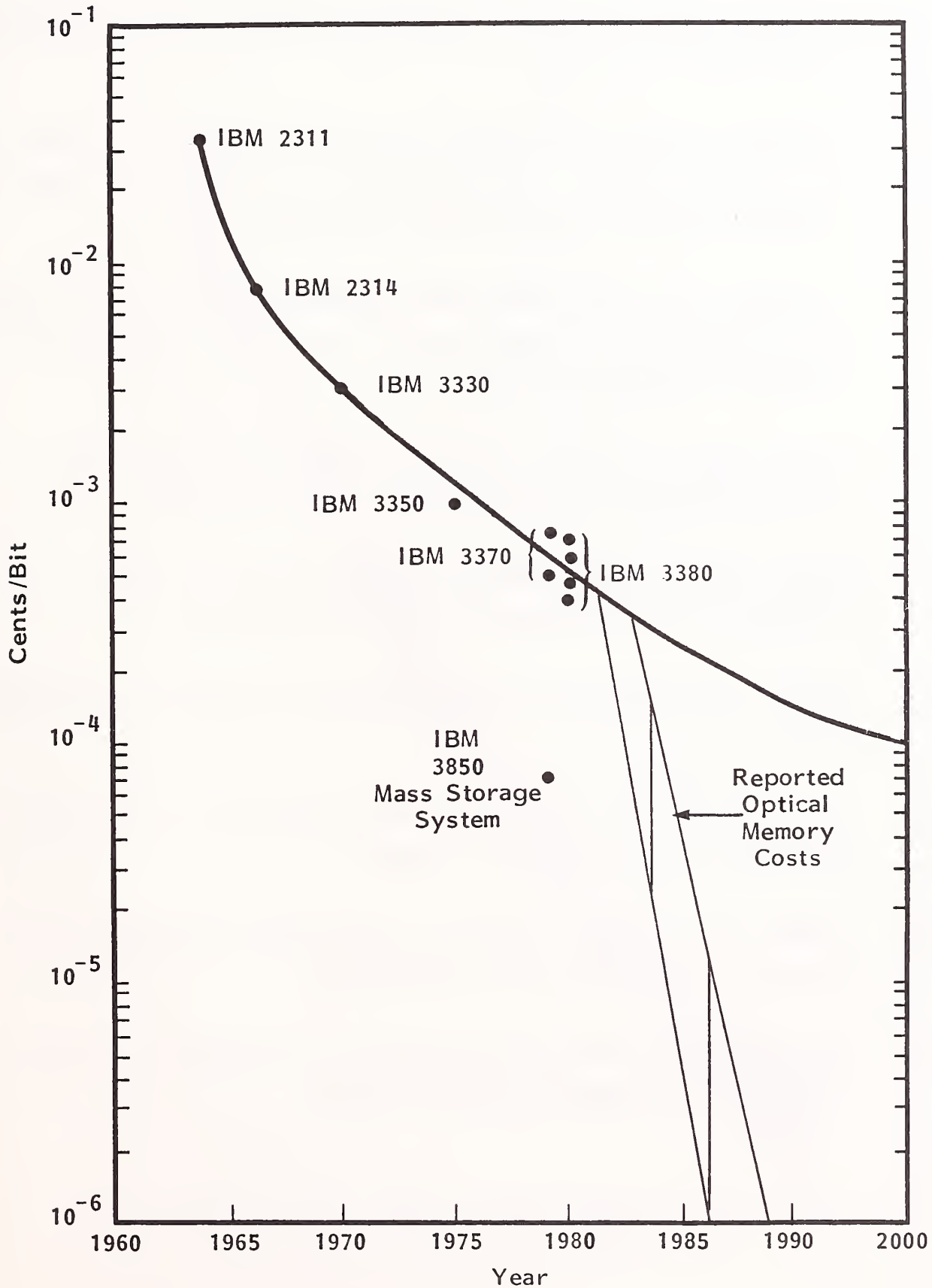


- Indeed some commentators advocate an increased use of abstracting as a method of controlling the vast bulk of information that is potentially available but inaccessible because of its size and proliferation.
- This is seen as particularly important in the area of "grey literature".
- The publication of "abstracts only" would speed the availability of information through the elimination of lengthy publishing and printing processes. One vendor commented, "scientists need abstracts".
- The development of new disk technology, in terms of widely available and useable products, has been relatively static in the last couple of years, the IBM 3380 having been announced in 1980.
- The development of the market for really massive databanks has also been slow: IBM introduced the 3850 Mass Storage System in 1980 and subsequently other manufacturers, notably MASSTOR, have announced products.
- However, there is now increasing interest in optical memory technology. This much-heralded development area is now beginning to show signs of producing useable products that can further drive down the costs of data storage.
- The development of digital optical storage systems has been a spin-off from the development of analogue videodisk systems common at the consumer level.
- However, digital technology has been a far greater technical challenge than the analogue type. This has been due to problems related to the need for more sensitive media to cope with the required high transfer rates and the sustaining of acceptable error-free performance.
- However, the benefits of developing such technology are tremendous. The optical devices are more rugged and (because they are read by a laser beam) disks do not suffer from wear.

- Currently, read-only systems are the most advanced in development as products, but read/write systems are beginning to become available.
- Fundamentally it is read-only systems' potential vast capacity and the anticipated low cost per bit at which they can be delivered that makes them a vital area of concern for vendors in the on-line database services market.
- It has been projected that a single optical disk platter (roughly the size of a long-playing gramophone record) is expected to have enough storage capacity for the Encyclopedia Britannica, including the illustrations.
- Clearly this must raise completely new possibilities in terms of electronic publishing and the development of the on-line market.
- It is probably true to say that the challenge of optical storage systems has yet to be fully gauged.
- This enormous storage capacity potential could effect a fundamental change in the way information and data is recorded, stored and communicated. Optical disks have the capacity to replace paper but could also complement and supplement printed materials and pictures (images and graphics) with full audiovisual representation and still have capacity to spare.
- Exhibit IV-II gives some indication of the potential impact of optical memory systems in terms of their storage capability and likely cost.
- It shows the declining costs of conventional disk storage in comparison with the reported future position for optical memory.
- For a more detailed discussion of the potential developments of Optical Memory Systems, readers are referred to Impact of Upcoming Memory Systems published by INPUT in August 1983.

EXHIBIT IV-11

COST COMPARISON - OPTICAL MEMORIES VERSUS MAGNETIC DISKS

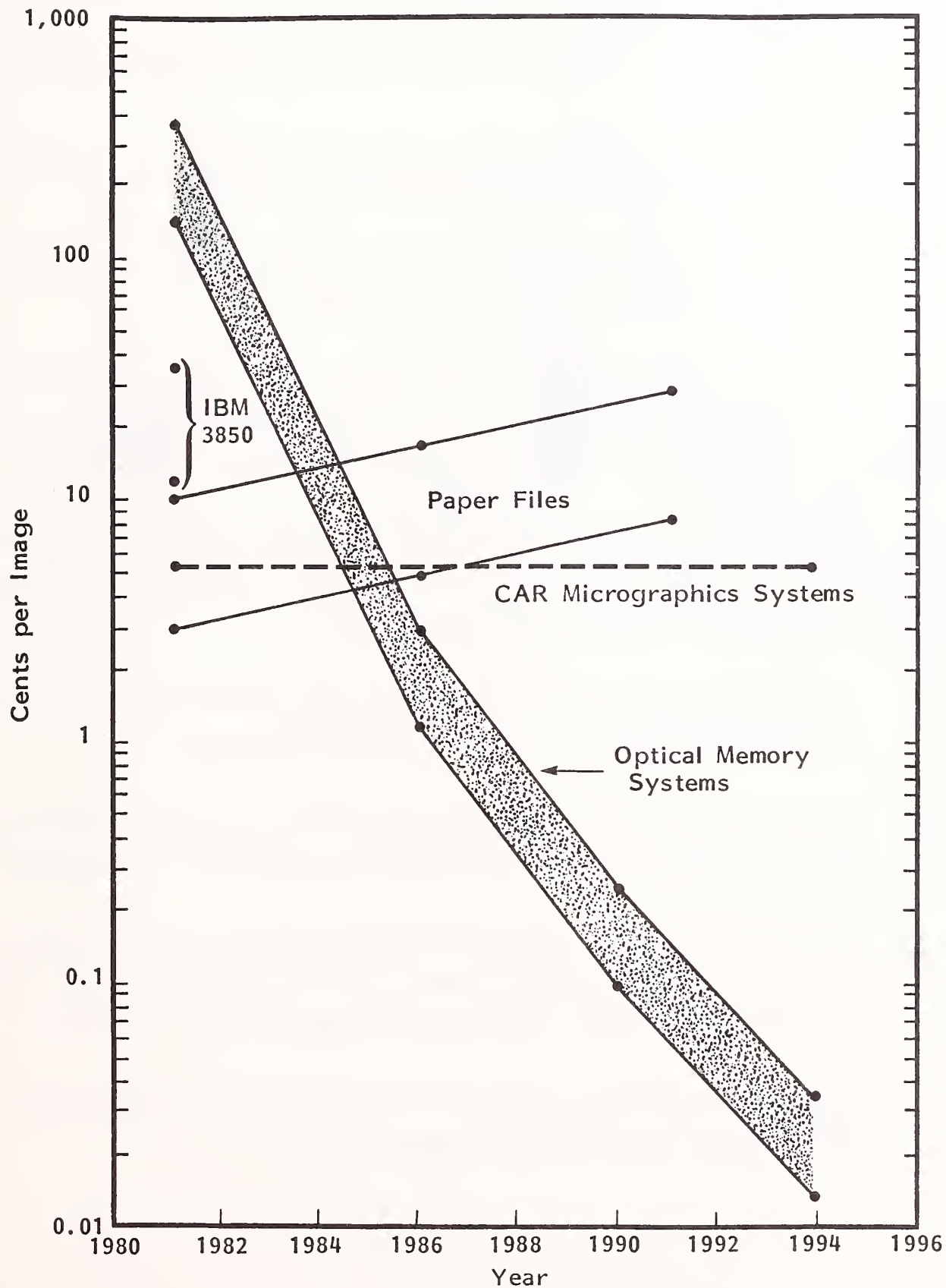


3. IMAGE SYSTEMS AND VIDEODISK

- To date, image systems have largely been confined to micrographics systems (microfiche and microfilm).
- Although they have been cheaper than paper for image storage in some cases, the initial processing and inconvenience of retrieval have limited their acceptance except for certain specific applications.
- They have, for example, been widely used for such applications as engineering parts catalogues and newspaper archives. Paper-based systems, however, have remained dominant in the office.
- Some reasons for this are that micrographics systems are difficult to read comfortably and have relatively clumsy access mechanisms.
- Modern microprocessor-controlled versions now on the market do improve access but are not a complete solution to these problems.
- Optical disk systems like videodisk are likely to alter that situation dramatically.
- It is anticipated that optical disk systems will become ten times less expensive than paper within the next five years.
- Exhibit IV-12 compares the cost of maintaining a single-page image of a document in accessible form on various media.
- Certainly applications of the videodisk are now beginning to multiply despite its failure to take hold in the consumer market.

EXHIBIT IV-12

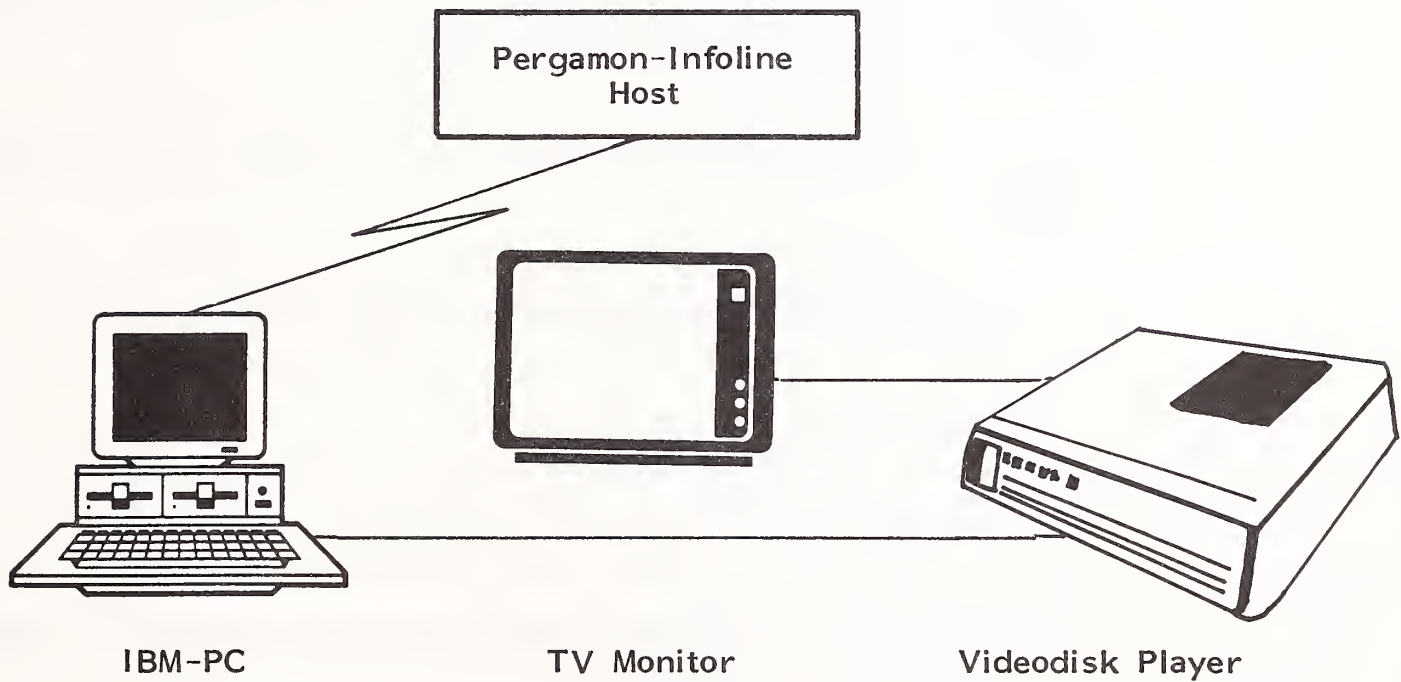
PROJECTED COSTS OF IMAGE STORAGE SYSTEMS



- Applications include:
 - An electronic encyclopedia project by Longman and Grolier.
 - Interactive education experiments by Thom-EMI in some London schools.
 - U.K. Central Office of Information Tax Fax trial system.
 - Advertising media data distribution on Philips Laservision optical disks by the London-based company Mediadisc.
 - An integrated automation digital optical laser disk system from General Electric of the U.S. for automated drawing storage and retrieval. (U.K. agents for Integrated Automation are Datalogic).
- Clearly this technological development opens up significant new opportunities for on-line database services vendors to develop completely new services and introduce enhancements to existing services.
- An example of this type of augmented on-line database service is that now available from Pergamon-Infoline for their Patent System.
- This system, as shown in Exhibit IV-13, is based on a videodisk and TV monitor attached to an IBM PC acting as remote terminal to the on-line database.
- In this application the conventional database access is made via the PC but address information is also provided to locate the relevant patent diagram stored on the videodisk. This can then be displayed on the TV monitor.
- This type of application offers considerable benefits to any database user where graphic representation is important.

EXHIBIT IV-13

SCHEMATIC DIAGRAM OF VIDEOPAT SEARCH SERVICE



- Chemical compounds databases are another possible application area.
- However, despite the possibility of large potential markets being opened up by these technological developments, interest amongst vendors is relatively low. This can be seen from the analysis shown in Exhibit IV-6.
- Only 20% of vendors rated this an area of high importance, and a further 28% rated it as an area of medium importance.
- Reasons mentioned by the 52% who rated it as area of low importance included:
 - Software difficulties in formatting images and data for input.
 - Too futuristic.
 - Too costly.
 - Technology not sufficiently developed enough to be able to support a sound marketing proposition.
 - Not relevant to vendor's database type.
- However, those vendors who rated this area as of high potential importance proposed a number of areas of potential application. These areas included:
 - Patent databases.
 - Encyclopedia/archival-type information.
 - Learning materials.
 - Picture libraries.

- Chemical compound representation.
 - Pictorial data for estate agents.
 - As a sales tool for developing use of databases.
- The general availability of software to control bit-mapped screens offers a very singular ergonomic advance to end users, namely the ability to simulate a piece of paper.
 - Combined with the vast storage capacities potentially available on videodisk systems, the kinds of applications listed above begin to look much more like realistic propositions.
 - Image-scanning technology to overcome the input problem is another necessary factor. Advances are being made in this area at the lower cost end as is evidenced by WANG's announcement of an image processing system that should be available in Europe later in 1984 at around \$15,000.

4. SOFTWARE DEVELOPMENTS

- One of the clearest messages resulting from the survey work done for this study was that major software developments were required. Both vendors and users were in general agreement that on-line database user interfaces must be improved if new classes of users are to be attracted to these services.
- Very nearly 70% of all vendors interviewed rated the availability of increasingly user friendly software as a high-priority concern.
- Users, as can be seen from Exhibit V-4 in the next chapter, rated the following three features as their most important current concerns:

- Multiple file searching.
 - Common command-retrieval languages.
 - Increasingly user friendly software.
- A number of possible software developments were mentioned by vendors, some particular examples of which are listed in Exhibit IV-14.
 - It must also be borne in mind that a number of vendors were very cautious and sceptical about the practicality and advisability of some potential software developments.
 - For example, a number of vendors felt that moves towards the development of a common command-retrieval language were doomed to failure. Some felt vulnerable in a competitive sense.
 - Clearly it would be a development that would favour the smaller European hosts at the expense of the larger ones.
 - Multiple file searching (the ability to combine searches from more than one file and possibly the ability to process a search in a number of files at the same time) was the most highly rated user requirement.
 - In contrast, vendors rated this at a much lower priority, only some 30% rating it as a high-priority item. This disparity of viewpoint might be partly accounted for by the high percentage of bibliographic database users in the sample.
 - Some vendors were planning to introduce software that would address this area--for example, multiframe indices, merging output and data transference.

EXHIBIT IV-14

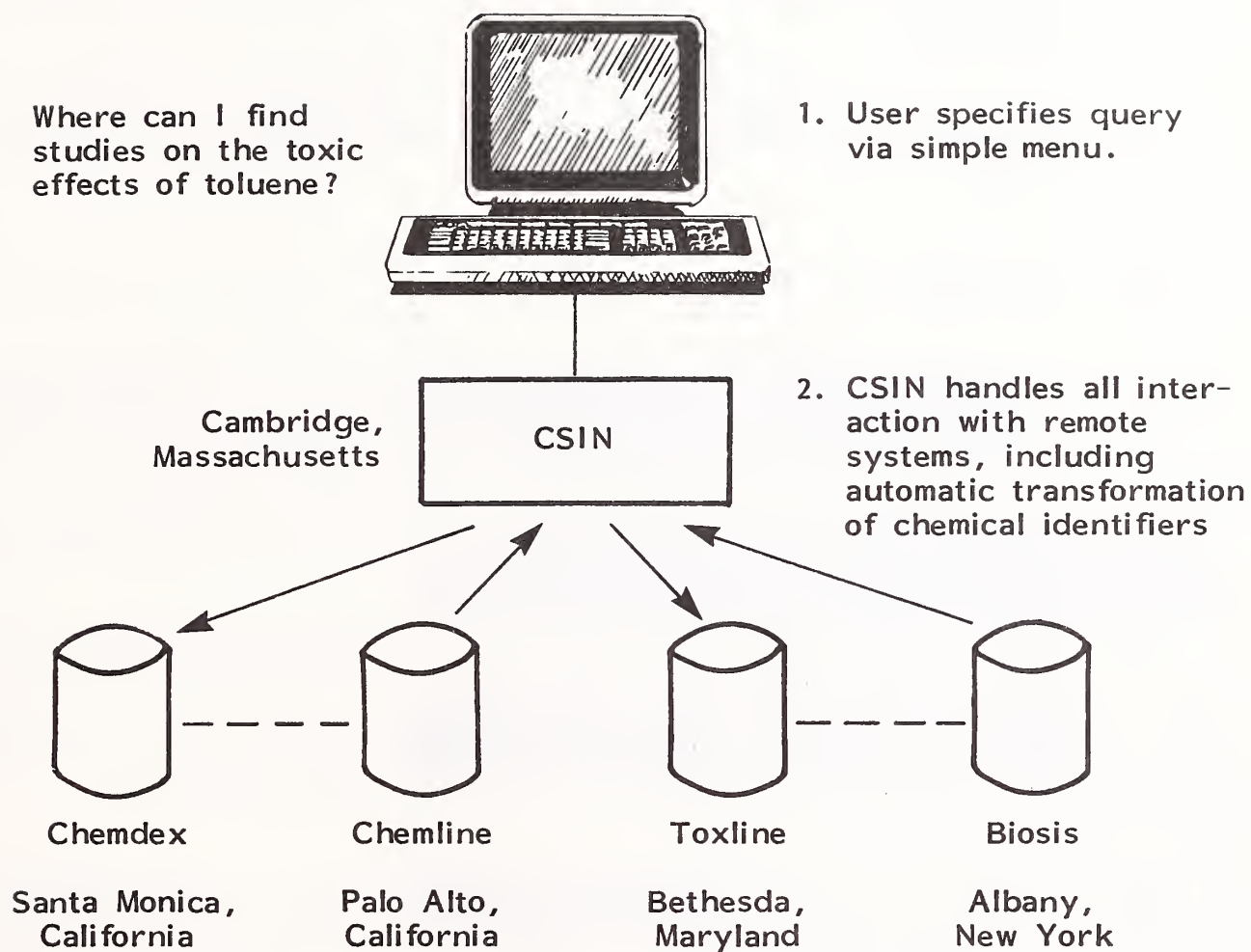
VENDOR COMMENTS ON POSSIBLE AREAS FOR NEW SOFTWARE DEVELOPMENT

- Artificial intelligence will become very important; it will provide the capability to interrogate the database in natural language.
- There is a strong need for more and better menu-driven systems in order to open up the databases to non-specialist users.
- Software is required that will assist in making dynamic decisions on how to relate information together.
- Expert systems could help deduce the users' level of competence in using the system; it would require knowledge of the users' areas of interest.
- Software is required that will make the operation for the 'first-time' users easy and that will help to extend the use of the service.
- Standardised inquiry language and procedures for all database services would help to increase acceptance.
- Simple but powerful languages are needed.
- Each database should function with its own specific software but needs user software guides for interrogation.

- One recent development in the area of more user friendly software has come from the U.S.-based Menlo Corporation's In-Search system.
- In-Search, a PC-based product, provides simplified access to DIALOG's databases.
- In-Search permits users to organise search requests before dialing the database service. It uses English-language commands and provides a "help" facility.
- Windowing features are also provided so that users can simultaneously display lists of available databases, help instructions and contents abstracts.
- Another development, using a relational database management system, eases the user interface to multiple host on-line databases.
- The Chemical Substances Information Network (CSIN) provides a uniform interface to a network of different on-line chemical databases. The system, developed by the Computer Corporation of America, is shown schematically in Exhibit IV-15.
- The CSIN development is based on a frontend facility for searching widely dispersed and independently operated on-line databases.
- The system supports a uniform, self-documenting approach to query formulation via a logical sequence of menus and preformulated scripts for common classes of searches.
- CSIN automatically executes the search on the remote system once the user has specified the parameters of a specific search and specified the databases to be accessed.

EXHIBIT IV-15

CHEMICAL SUBSTANCES INFORMATION NETWORK (CSIN)



- It then combines and formats the retrieved data according to the user's specification.
- Thus the user interface is raised above the level of the individual on-line service protocols and command languages and other unique characteristics of the system.
- User benefits claimed include reduced end-user errors and reduced on-line costs.

5. VIDEOTEX

- Although the scope of this study did not extend to a full assessment of the VIDEOTEX market, it is an area that must be considered. Its high profile in the media, and an increasing number of applications determine that it will be a strategic factor in the further development of the on-line database market.
- Public service VIDEOTEX is already widely established in France (TELETEL) and the U.K. (PRESTEL). The German (BILDSCHIRMTEXT) and Italian (VIDEOTEL) systems have yet to go fully operational but this is anticipated to take place in the last quarter of 1984 and mid-1985 respectively.
- Exhibit IV-16 provides an indication of how vendors assessed VIDEOTEX as a technology likely to have an impact on the development of the on-line database market.
- France stands out clearly as the country where, due perhaps to government initiatives, VIDEOTEX is seen as an important development. Interest appears to be much lower in the other three countries, particularly in the U.K. and Germany.
- Exhibit IV-17 gives examples of vendor comments on the impact of VIDEOTEX on on-line database markets.

EXHIBIT IV-16

VENDOR ATTITUDES TOWARDS THE IMPACT OF VIDEOTEX ON THE DEVELOPMENT OF ON-LINE DATABASE MARKETS

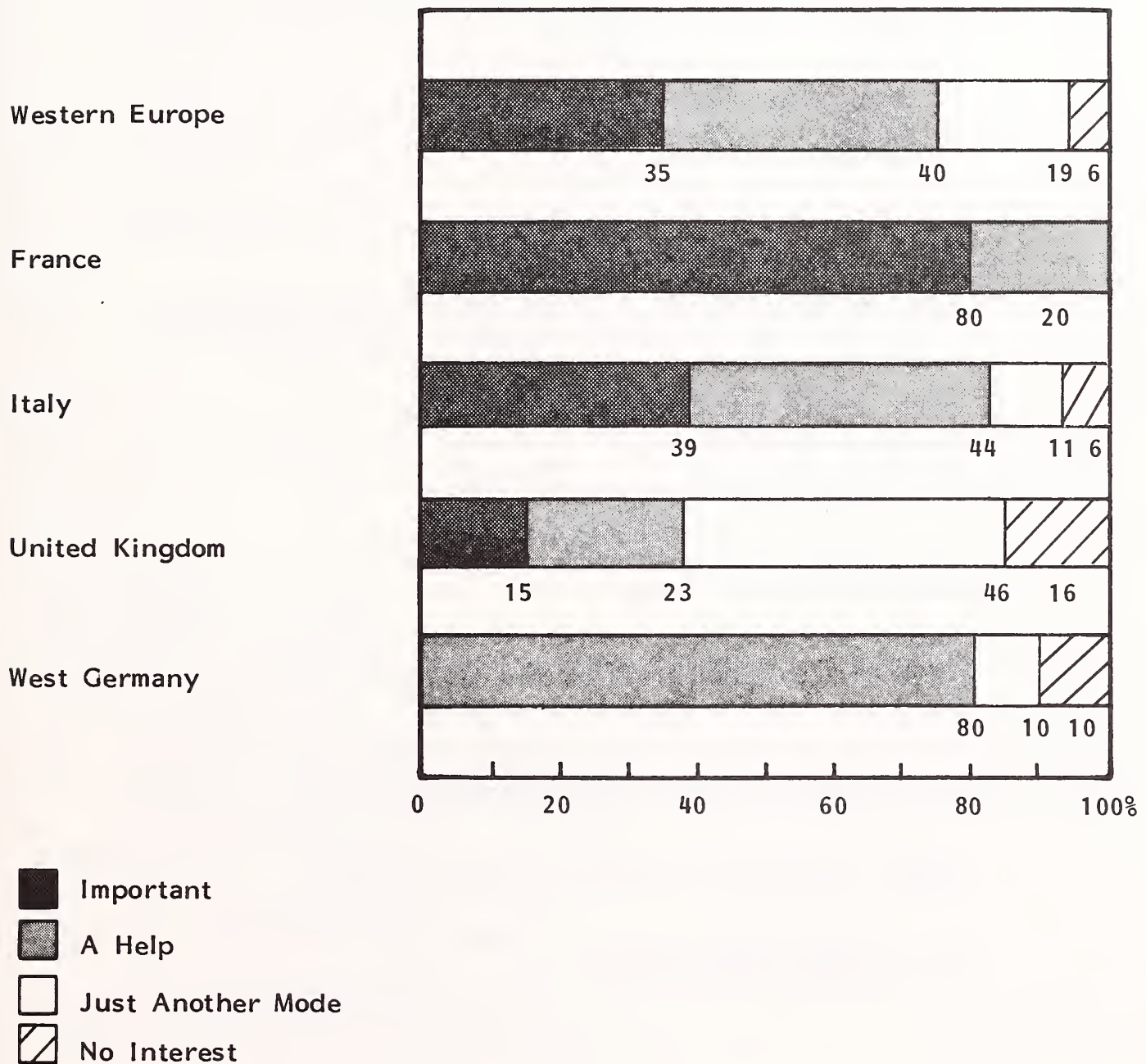


EXHIBIT IV-17

VENDOR COMMENTS ON THE IMPACT OF VIDEOTEX ON ON-LINE DATABASE MARKETS

- Important in France because of government support for MINITEL.
- Need for VIDEOTEX is dependent on the application, on the type database, on the market you are aiming for; not suitable if they have a PC.
- It is too oriented towards home use, not commercial enough, not specific enough.
- The problems are that it cannot provide high-value-added products; believe it is only an area of medium-term interest.
- The problems are ergonomic, poor-quality display and a laborious operation.
- It is too clumsy and too expensive.
- May be useful for mass market systems but not the specialised professional market.
- VIDEOTEX is inexpensive, easy to use and based on a familiar system. Colour makes it even more attractive. Home computers will not impact its penetration of the market.
- The advent of the home computer is reducing the importance of VIDEOTEX in the development of the market.
- Technically speaking, VIDEOTEX is a regression because possibilities offered are inferior to what is possible.
- Will perhaps help to open the market and make on-line database services better known.

- Although some vendors were enthusiastic about the prospects for VIDEOTEX (particularly in France), most were doubtful about its potential.
- Certainly most vendors saw it as a development aimed at a completely different type of user than the typical "professional" in conventional database markets. The non-expert or casual user were mentioned.
- The increasing acceptance of personal computers in business and the home is also seen as likely to impact the development of VIDEOTEX systems. Technological development is eroding some of the original strategic concepts upon which the VIDEOTEX systems were based.
- INPUT believes that as on-line markets develop further, particularly into new areas of more general interest to business and the public, that the VIDEOTEX and on-line database sectors will converge.
- Already products are appearing on the marketplace that support this trend. On-line terminals with VIDEOTEX features and vice versa.
- The strongest VIDEOTEX market in Western Europe is most likely to develop in France on the back of MINITEL and other government-supported schemes.

C. SOCIETAL ISSUES

- Certain societal issues are likely to have an important influence on the development of the on-line database market. The most important of these, which are discussed below, are:
 - Copyright law.
 - Data protection.

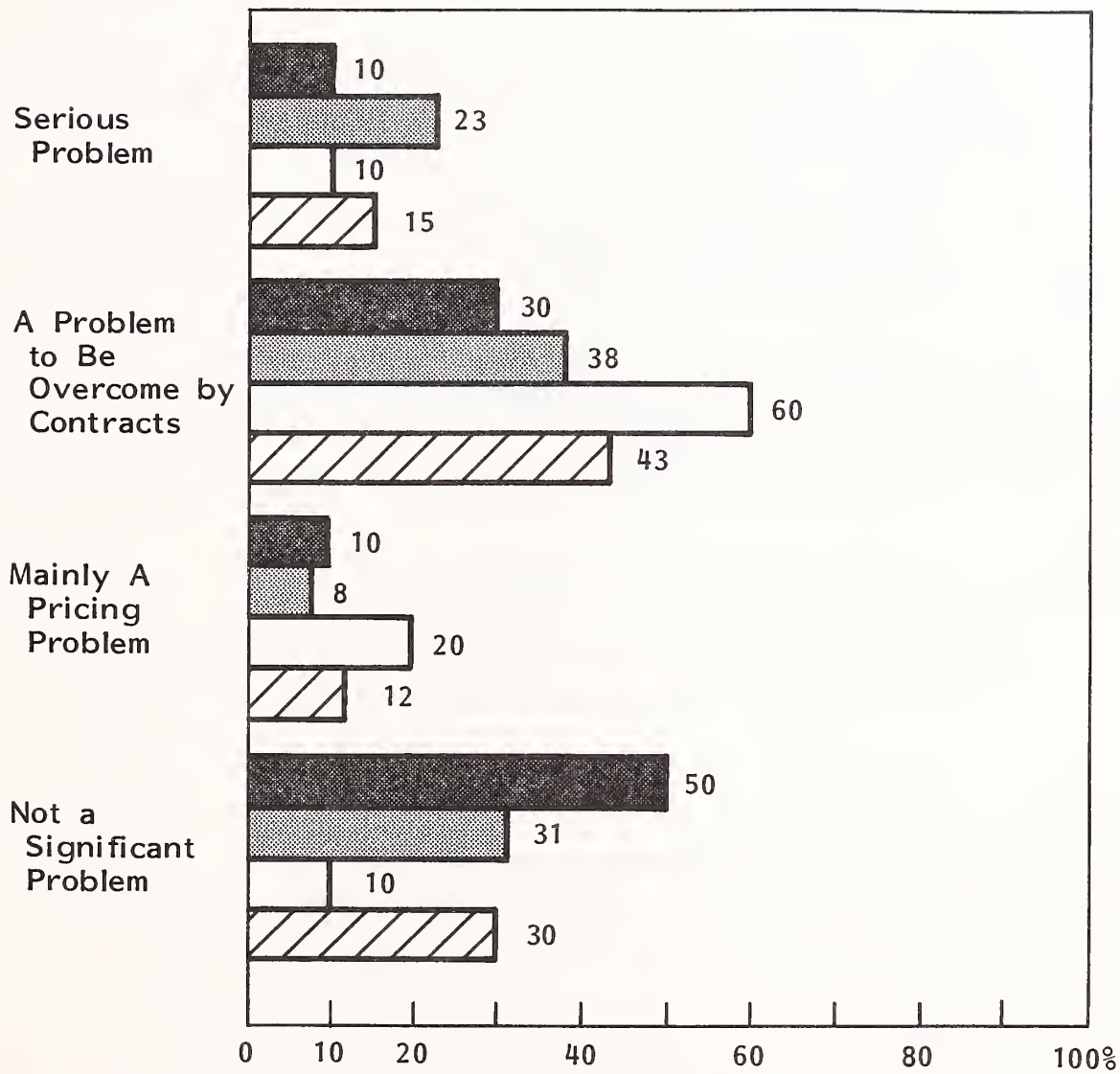
- Transborder data flow.
- Trade union activity.

I. COPYRIGHT

- The protection of copyright is clearly an important aim for operators of on-line database services.
- However, for those services concerned primarily with volatile data or operating where the convenience of the on-line delivery mode makes copying not worthwhile, it is not a key issue at all.
- Vendor attitudes towards copyright were classified into the four major categories shown in the table in Exhibit IV-18.
- Nearly one third of the vendors interviewed classified copyright as "not a significant problem", while only 15% rated it as a serious problem.
- Over 40% of the vendors considered copyright as a problem that in practical terms could be overcome by contracts. A further 12% felt like it could be considered mainly a pricing problem.
- A concern raised by a number of vendors was the lack of harmonisation between the different European countries on copyright law. In particular were the major differences that exist between the Roman and Civil Law systems.
- At the moment, concern over copyright is not a serious problem for most on-line database vendors.

EXHIBIT IV-18

VENDOR ATTITUDES TOWARDS COPYRIGHT



- French Vendors
- United Kingdom
- West Germany
- All Vendors

(No Italian Data Available)

- Two developments that could increase copyright problems are:
 - The wider use of downloaded data on local systems, in particular the personal computer.
 - An increase of database brokerage or reselling in the distribution channel to the end user.
- Practical approaches to the issue of copyright protection mentioned by vendors included:
 - Using programs to remove control bits from data transmitted in order to make output impossible to load onto disk files.
 - Placing a copyright statement on the display screen.
 - User contracts obliging user to commit to personal use only.
 - Imposing an access tariff (transaction pricing).
 - Payment of monthly license fee to cover down-loading data.
 - Relatively high subscription fee.
 - Introduction of a permanent update service.

2. DATA PROTECTION

- The protection of data, particularly relating to information concerning individual people, has been a concern for society from the inception of the computer industry.

- Within Europe each country has enacted legislation in line with their commitment as signatories to the Council of Europe convention for the protection of individuals with regard to automatic processing of personal data.
- Data protection laws can cause problems for some on-line database services, but it is not a general problem in the view of the vendors interviewed. This is demonstrated by Exhibit IV-19, which tabulates vendor attitudes on this issue.
- There are some differences in attitude between the individual country vendor groups. For example, in France this issue was lowly rated, whilst in West Germany most vendors at least considered it to be a problem.
- One West German vendor commented, "privacy is overtuned in Germany".
- In general, vendor attitudes towards this area can be summarised by the comment made by one vendor that "data privacy is an issue, but not a problem".
- Clearly data protection laws must be closely checked by vendors, particularly in the case of databases containing personal details on individuals.

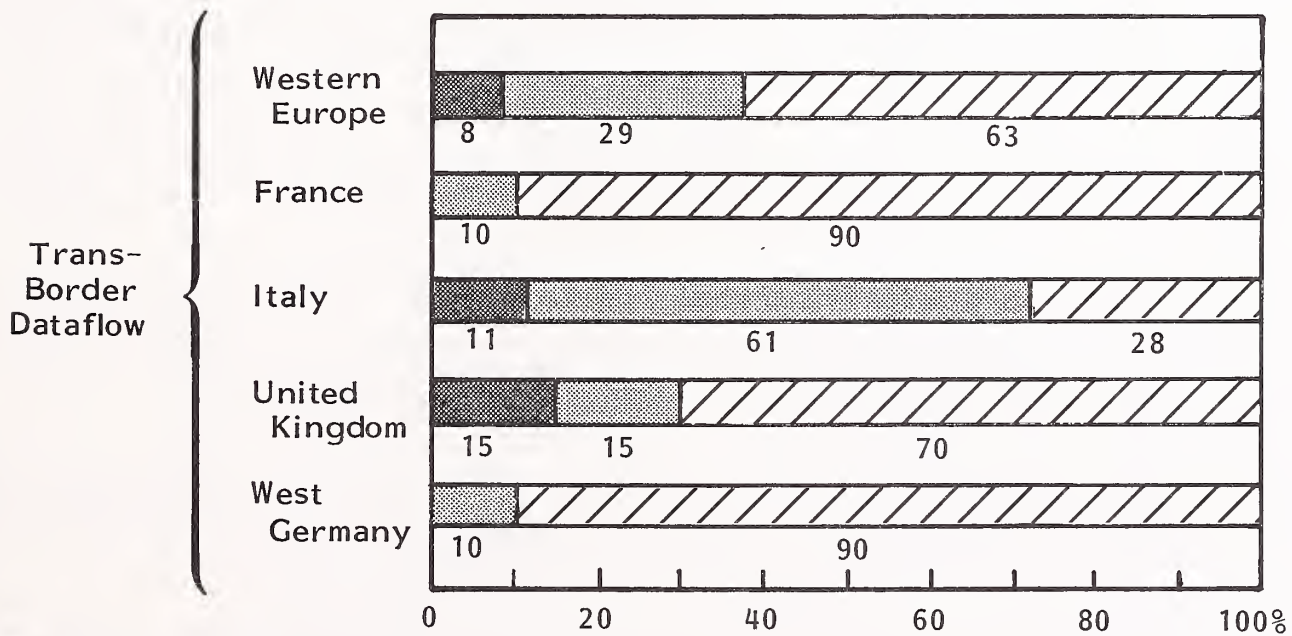
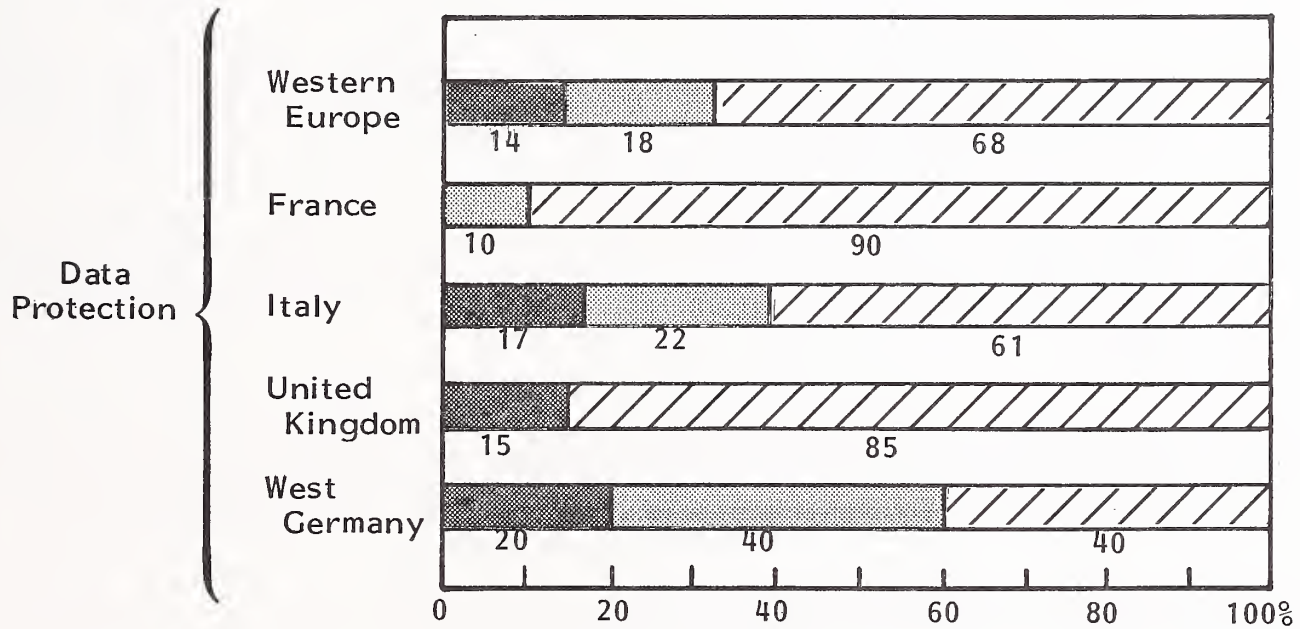
3. TRANSBORDER DATAFLOW




- Modern communications technology makes the transfer of vast quantities of data across national boundaries not only possible but a vital necessity for the efficient operation of multinational companies.
- This situation has raised a number of concerns in respect of:
 - The sensitivity of data of possible national importance.
 - The limitation of data privacy laws within national boundaries.

- The location of data in foreign countries beyond the control of the owners.
 - Telecommunications regulations.
- In response to the possibility of transborder dataflows being used to overcome national data privacy laws, international agreements have been made.
 - They have been designed to balance the need to protect data with the general commitment in democratic countries to the free and unhindered flow of information.
 - The council of the OECD adopted an agreement entitled "The Guidelines Covering the Protection of Privacy and Transborder Flows of Personal Data".
 - The Council of Europe adopted the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data.
 - These agreements, together with corresponding national legislation referred to above under data protection, have essentially overcome the problems of data privacy in respect of transborder dataflows.
 - Many of the other concerns raised by the phenomenon of Transborder Data-flow remain. But it is for example required that data concerning the Common Market be held on hosts located within the EEC.
 - The attitudes of vendors toward the issue of transborder dataflows as a possible problem to the development of the on-line database market are summarised in Exhibit IV-19.
 - For most vendors this is not a problem area except in Italy, where over two-thirds of those interviewed rated it as such.

EXHIBIT IV-19

VENDOR ASSESSMENT OF DATA PROTECTION AND TRANSBORDER DATAFLOW ISSUES



-  Significant Barrier to Development
-  A Problem
-  Not a Problem

- The principal practical concern of on-line database vendors lies in the area of telecommunications regulations.
- One vendor, for example, commented that the West German Bundespost is notoriously uncooperative whereas the French PTT was much more open in its approach.
- Another problem area clearly exists for those vendors concerned with selling services in Eastern Europe.
- In the longer term many issues in respect of Trans Border Dataflows will need to be resolved and these will affect the development of the on-line database industry.
- The effect on the operations of multinational or transnational companies and the economic impact of transborder dataflows has yet to be fully realised.

4. TRADE UNION ACTIVITY

- Trade union activities, an important societal issue, does not at this time represent a problem of any significance to the development of the on-line database industry.
- Only 10% of all vendors interviewed rated it as a problem.
- However, in the longer term, particularly with increased participation in the market by conventional, heavily unionised printing and publishing organisations, trade union activities may represent a significant issue.
- For example, one vendor commented that the need to use NGA (National Graphical Association) technicians was a problem.
- One vendor commented that the re-entering of data was a Union-generated overhead.

V PRODUCT AND MARKETING CONSIDERATIONS

V PRODUCT AND MARKETING CONSIDERATIONS

- The major product and marketing considerations that are facing the vendors of on-line database services are discussed in this chapter under the following headings:
 - Product Development. The product enhancements and additional services most in demand by on-line database users. A comparison of users' and vendors' prioritisation of requirements for additional features and services are analysed.
 - User Ratings of Vendor Services. User ratings of on-line database services in respect of:
 - . Quality of data/information in the database.
 - . Ease of use.
 - . Overall service.
 - Pricing. Assessments of pricing levels and user attitudes towards pricing.
 - Market Opportunities. Vendor assessments of new areas of opportunity and classification of subjects of user interest.

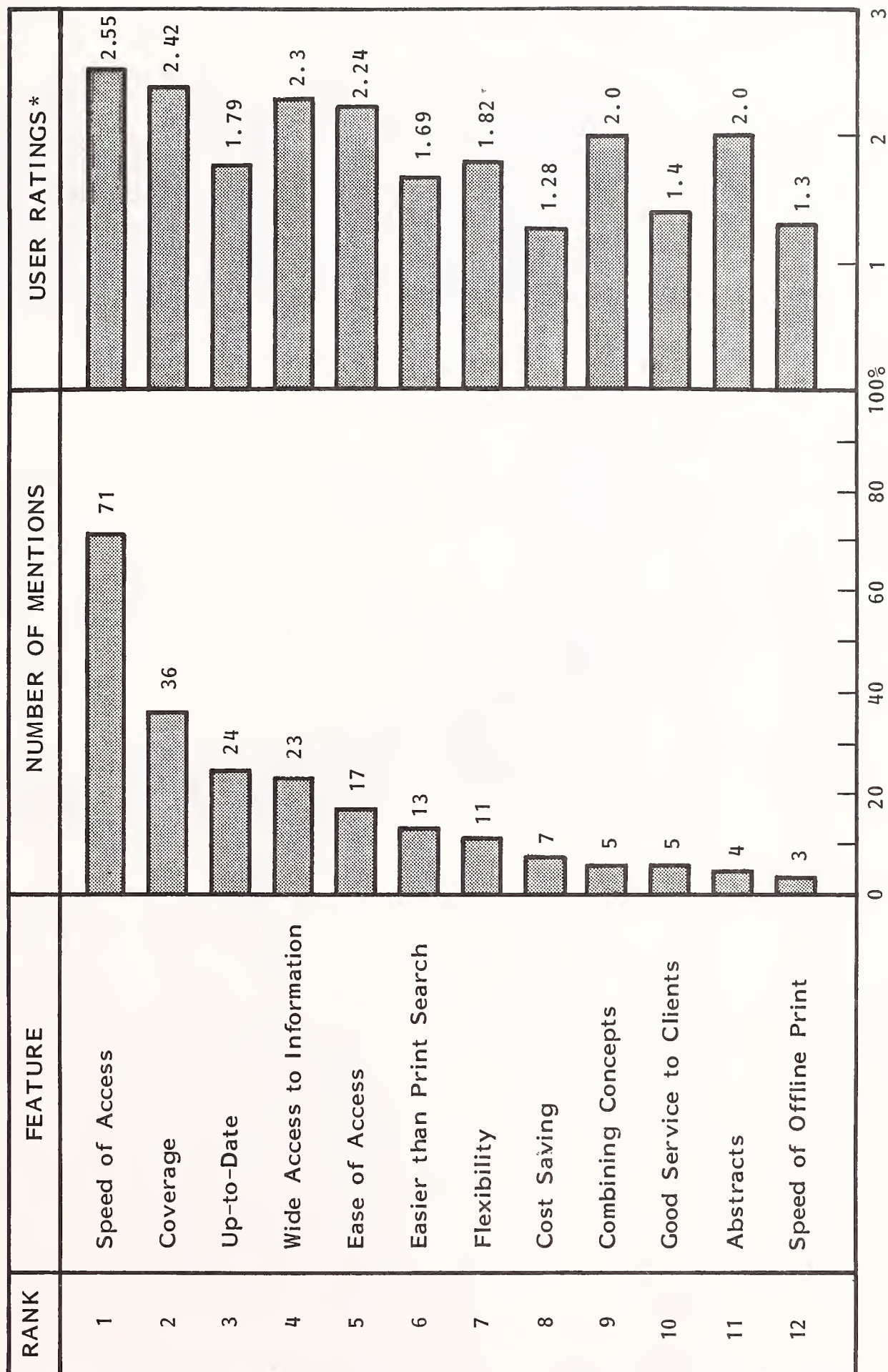
- Potential barriers to Market Development. European languages, user acceptance of on-line database services and the need for market conditioning.

A. PRODUCT DEVELOPMENT

- A key service for any vendor must be the improvement and development of the service in line with the needs of existing and potential users.
- An insight into those features of on-line database services that are candidates for enhancement or improvement was gained from users' nominations of the three best and three worst features of the services used.
- Exhibits V-1 and V-2 show the summarised results of these user ratings. The features or deficiencies are ranked by number of mentions and in each case the average user rating is shown.
- This was calculated as an arithmetical average of the users' prioritisation of most important, second most important, etc.
- The speed of access to data and information was seen by users as of overriding importance. Not only did this feature get by far the highest number of mentions, but it was also rated the highest in the user ratings.
- Other features that scored highly were currency, coverage (the size and comprehensiveness of individual databases) and the great range of databases available on-line (giving wide access to information).
- A consistent theme running through users' comments on these issues was that on-line databases gave them access to information, both in depth and across a wide range of subjects that it would be impossible to cover in any other way. Quite often it represents the only way for the user to get the answer.

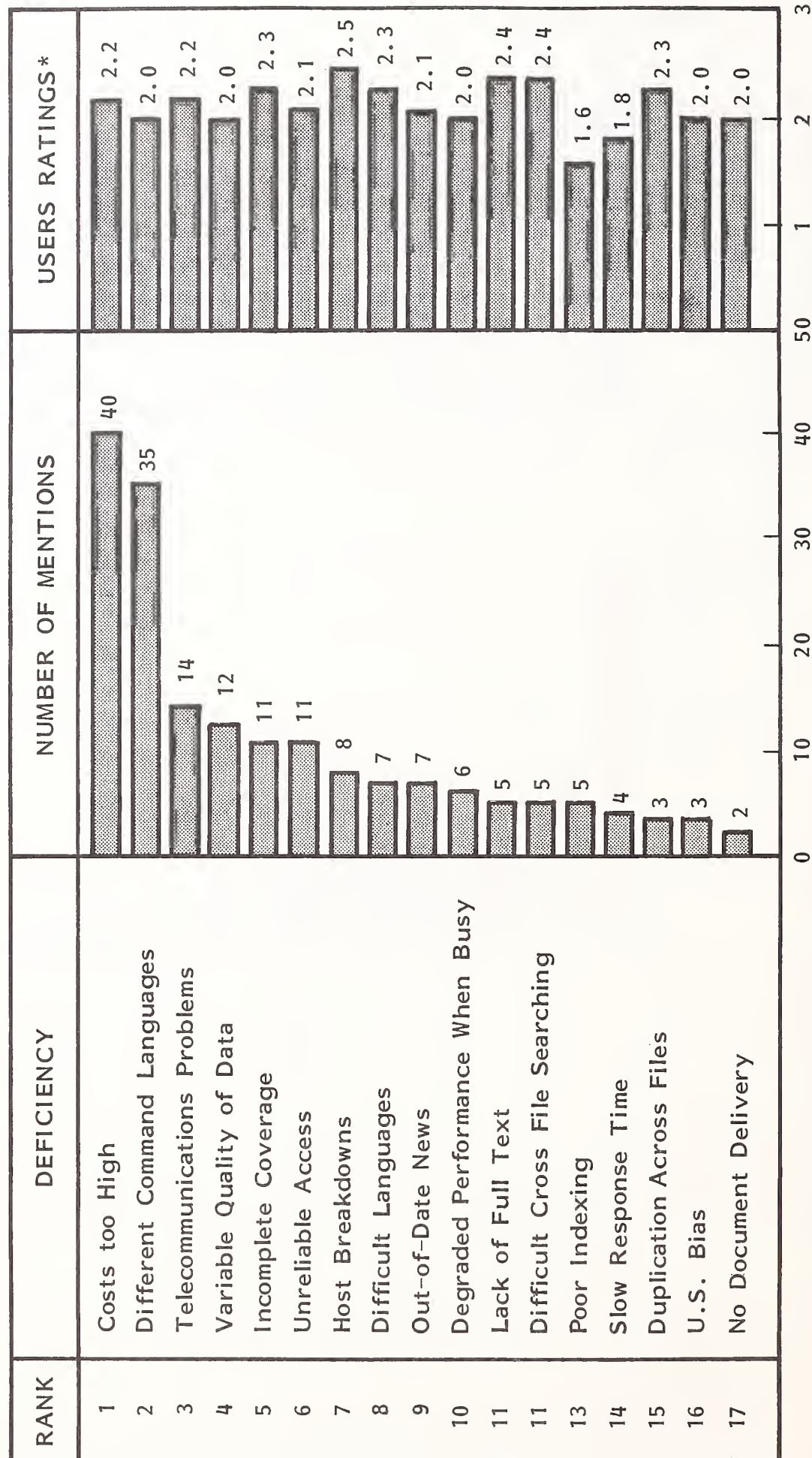
EXHIBIT V-1

USER RATINGS OF BEST FEATURES OF ON-LINE DATABASE SERVICES



* Average Rating as 1st, 2nd or 3rd-Best Feature.

EXHIBIT V-2 USER RATINGS OF MOST SERIOUS DEFICIENCIES OF ON-LINE DATABASE SERVICES



* Average Rating as 1st, 2nd or 3rd-Most Serious Deficiency

- Cost and the range of different command languages were cited as the most important deficiencies. The cost of on-line database services is a recurring theme and is discussed in the section on pricing below.
- Standardisation of command languages would clearly be in many users' interest. However, many practical problems exist in respect of the implementation of such a concept.
- From the user ratings it is clear that certain other deficiencies, although less frequently mentioned, were critical to the users in question. Examples are host breakdowns, the lack of full text and difficult cross-file searching.
- Clearly a number of those problems will relate to specific services and specific types of databases. Vendors should examine their product offerings appropriately.
- Both users and vendors were asked to rate the importance of various features and services that are considered important to on-line database use. Exhibit V-3 and V-4 show the results of the analysis in comparative form.
- Exhibit V-3 shows this comparison of ratings from the vendor standpoint. Exhibit V-4 shows it from that of the user.
- These two exhibits show the differences in prioritisation between vendors and users on a number of points. The most significant of these are:
 - Use of PC rather than dedicated terminal.
 - Multiple file searching.
 - Common command-retrieval languages.

EXHIBIT V-3

VENDOR ORDERING OF IMPORTANT ON-LINE DATABASE FEATURES AND SERVICES

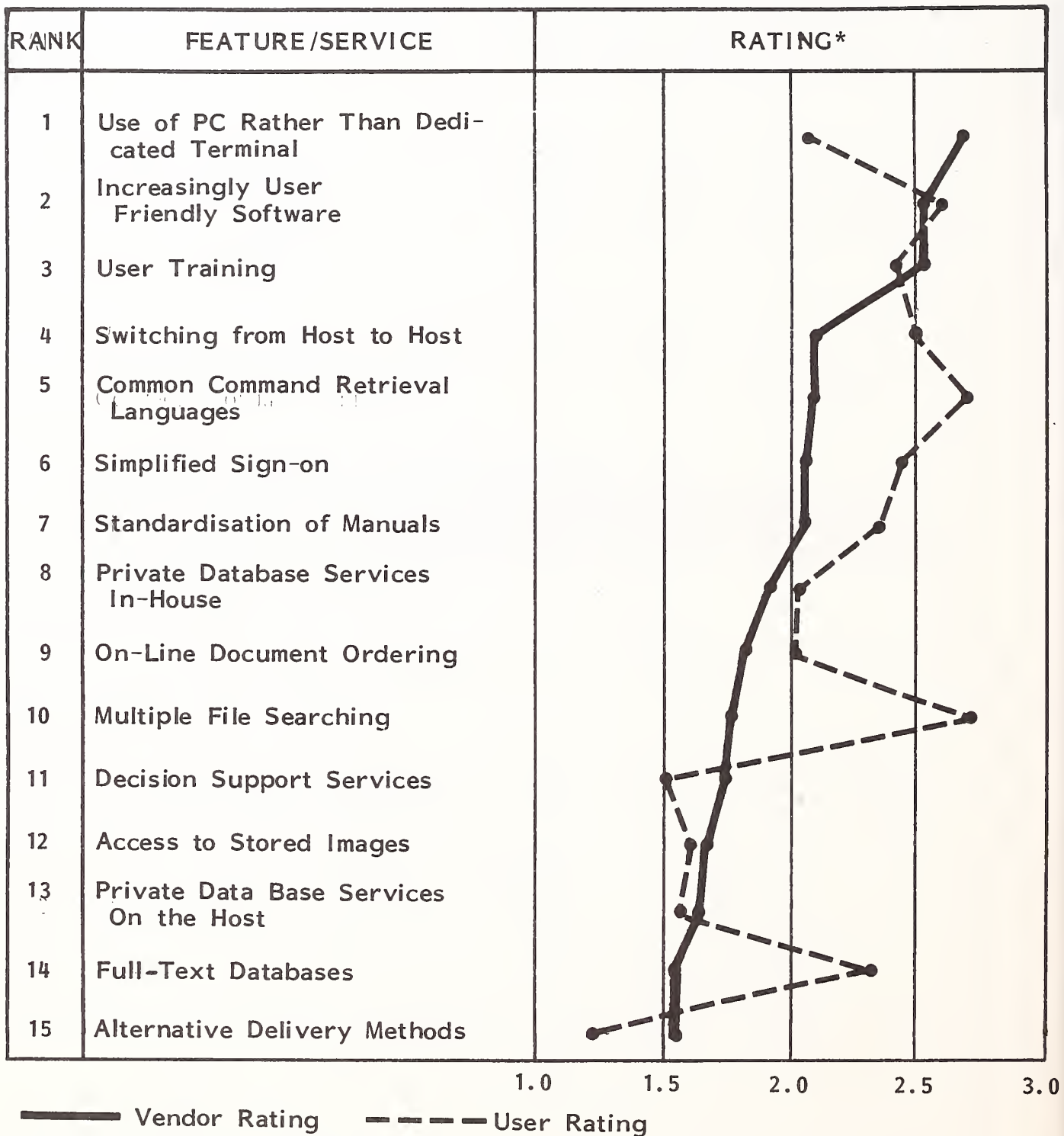
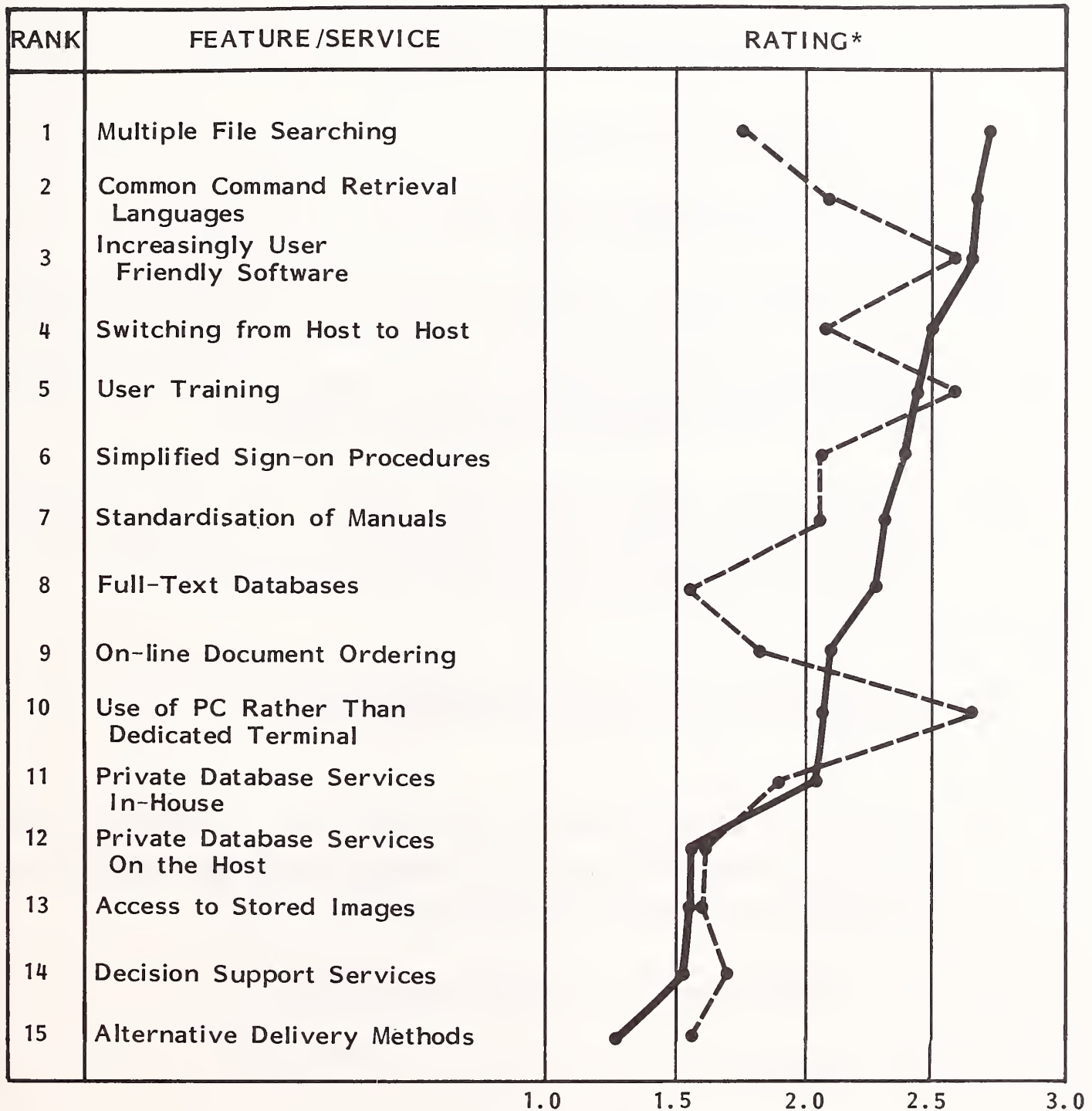


EXHIBIT V-4

USER ORDERING OF IMPORTANT ON-LINE DATABASE FEATURES AND SERVICES



— User Rating - - - Vendor Rating

* 1.0 = Low, to 3.0 = High

- User training.
- Full-text databases.
- In contrast, vendors and users were broadly in agreement over the rating of issues such as:
 - Increasingly user friendly software.
 - Access to stored images.
 - Private database services-on host.
- It is not surprising that vendors and users rated the use of PCs rather differently. As already discussed above, PCs represent an area of new and expanded opportunity for vendors. From the standpoint of an existing terminal user, PCs probably represent a further level of complexity.
- Clearly vendors should consider more carefully areas like multiple file searching, common command retrieval languages and full-text databases. All of these were rated significantly higher by users than by vendors.

B. USER RATINGS OF ON-LINE DATABASE SERVICES

- Users were questioned concerning their overall level of satisfaction for the particular services that they used. Satisfaction levels were requested, on a scale of one low to five high, on the criteria of:
 - Quality of data or information in the database.
 - Ease of use.
 - Overall service.

- Within the total sample of 109 users something in excess of 50 on-line data-base services, both Western European and U.S.-based, were identified.
- Exhibit V-5 lists the on-line database services that were mentioned with a frequency of four or greater. The frequency of mention in the four countries surveyed is shown in each case.
- Exhibit V-6 shows the user ratings for these services against the criteria listed above.
- It should be noted that a considerable proportion of the respondents (over 37%) were in the education/library category. This has an influence on the distribution of hosts sampled. The user profile analysis can be found in Appendix B.
- The DIALOG service was by far the most frequently mentioned. Over half the respondents were on-line users with this host.
- ESA/IRS, SDC/ORBIT, PERGAMON-INFOLINE and DATASTAR were also frequently mentioned, BLAISE and TELESYSTEMS slightly less so.
- In general the quality of data or information in the database was rated higher than ease of use and overall service.
- The average weighted score for all these databases against these criteria were:

- Quality of data	4.05
- Ease of use	3.86
- Overall service	3.76

EXHIBIT V-5

MOST FREQUENTLY MENTIONED ON-LINE DATABASE SERVICES

ON-LINE DATABASE SERVICE	NUMBER OF MENTIONS				
	FRANCE	ITALY	UK	WEST GERMANY	TOTAL
Dialog	10	4	40	2	56
ESA/IRS	9	5	17	-	31
SDC/ORBIT	7	4	18	-	29
Pergamon-Infoline	2	-	20	1	23
Datastar	5	1	16	1	23
Blaise	-	-	19	-	19
Telesystemes	13	2	-	-	15
Textline (Finsbury)	-	-	8	-	8
DIMDI	-	3	3	1	7
Eurolex	-	-	5	-	5
INKA	1	2	-	2	5
G-CAM	4	-	-	-	4
Total	51	21	146	7	228

EXHIBIT V-6

USER RATINGS OF ON-LINE DATABASE SERVICES

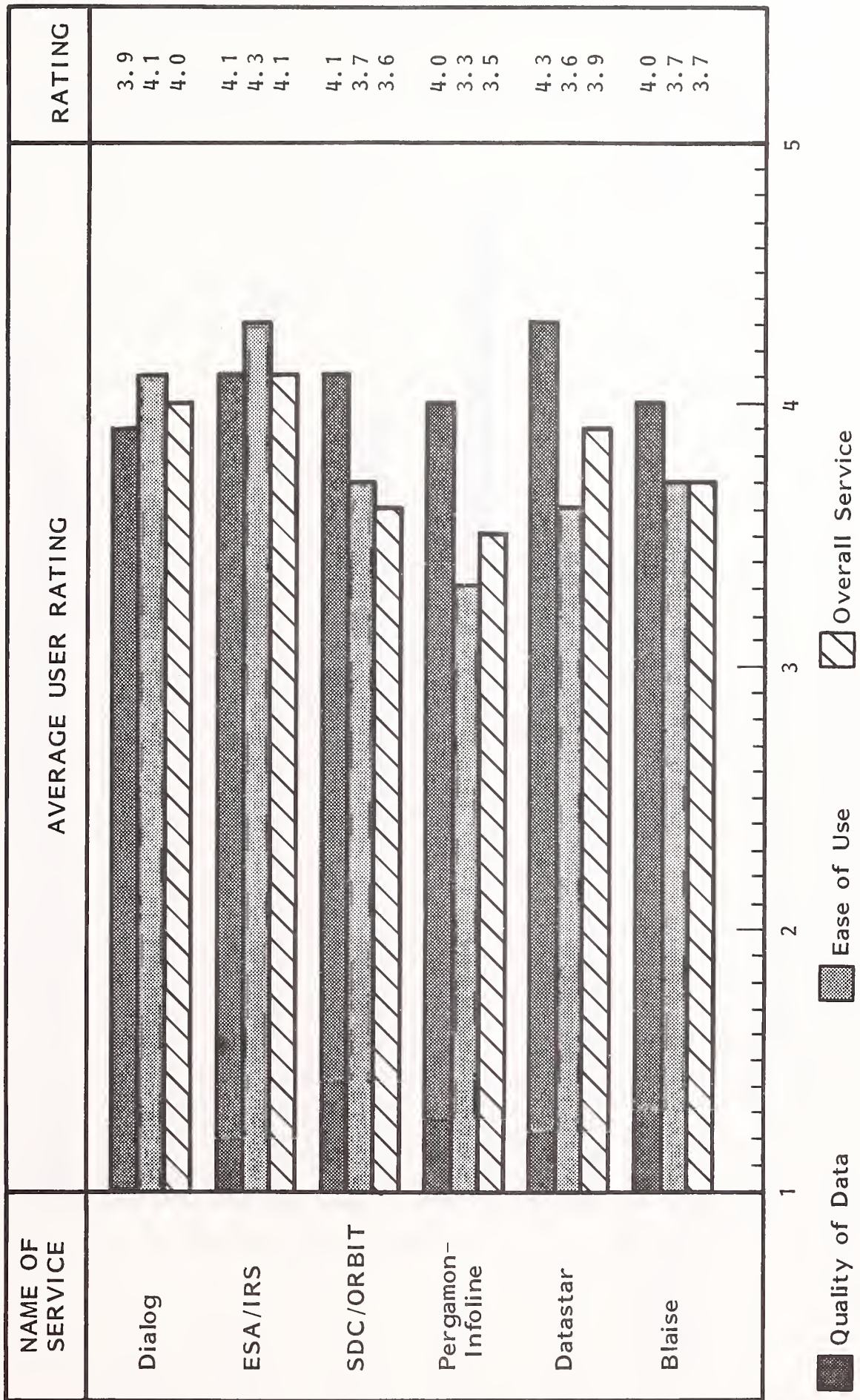
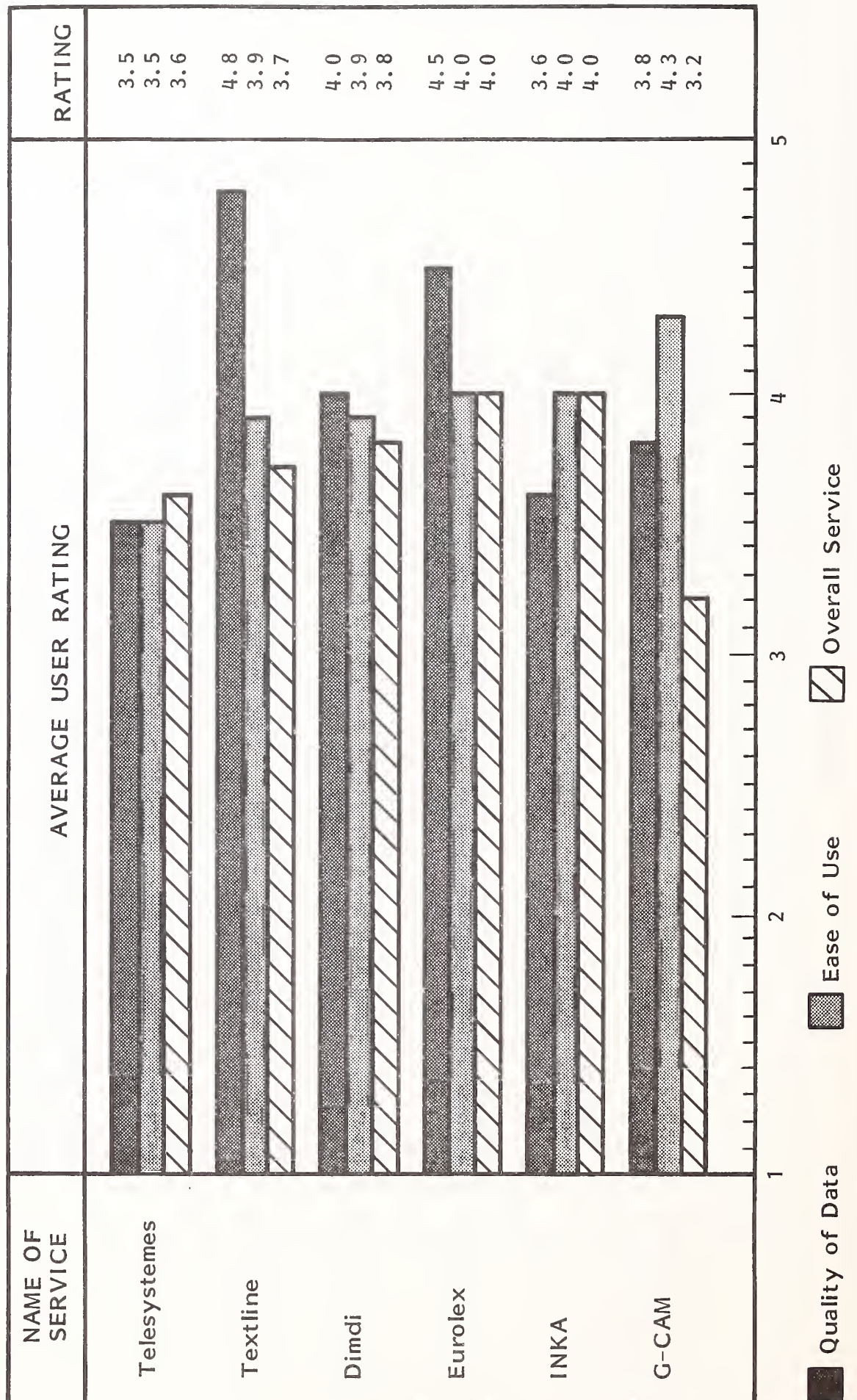


EXHIBIT V-6 (Cont.)

USER RATINGS OF ON-LINE DATABASE SERVICES



- TEXTLINE, EUROLEX and DATASTAR were rated particularly highly for quality of data.
- In terms of ease of use, ESA/IRS, G-CAM and DIALOG stood out.
- The top-rated companies for overall service were ESA/IRS, DIALOG, EUROLEX and INKA.

C. PROFITABILITY AND PRICING

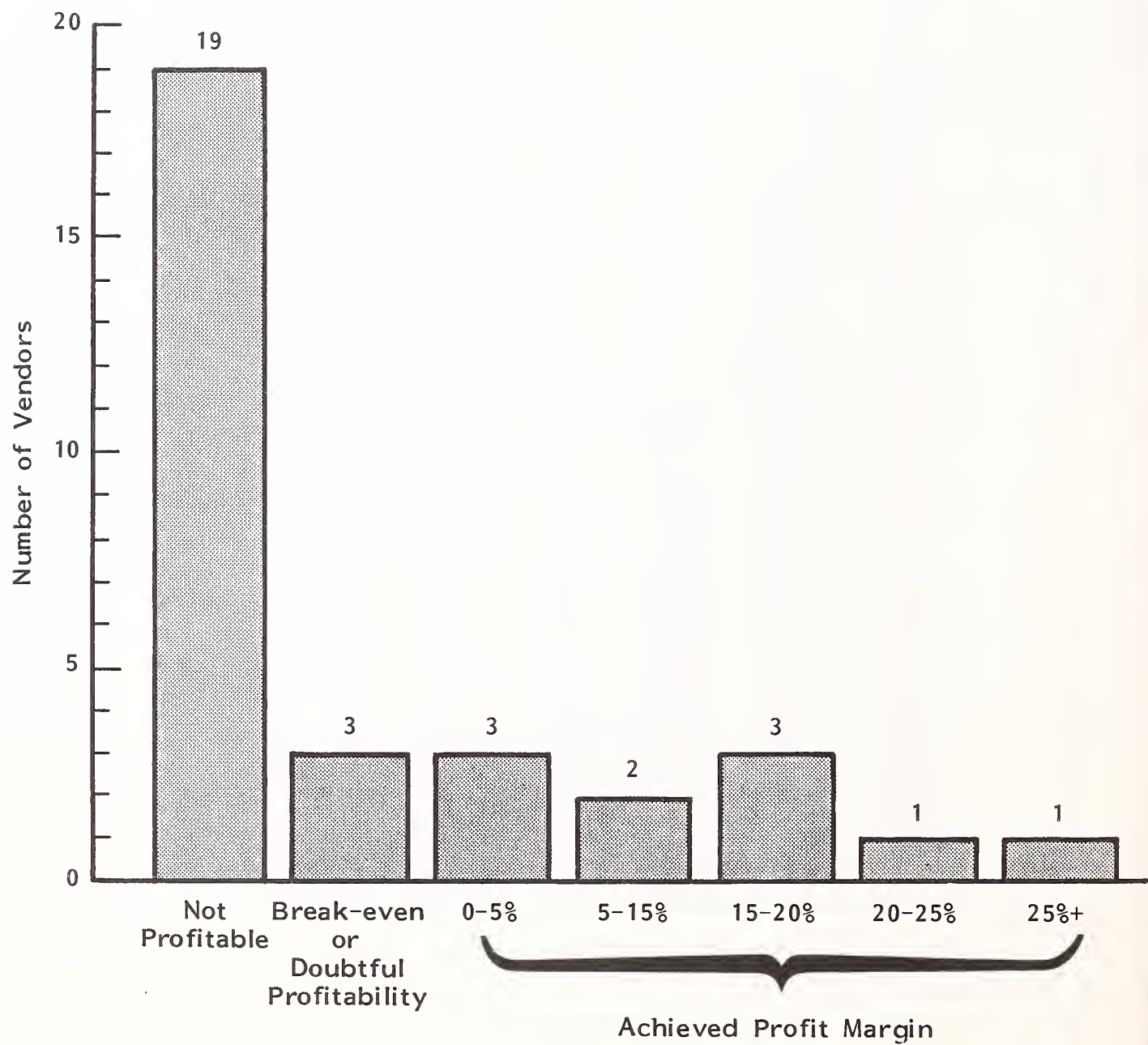
- Many of the on-line database vendors interviewed seemed to be in a dilemma over pricing and profitability.
- They were conscious on the one hand that they needed to raise prices to achieve profitability. On the other hand they felt that they would need to have lower prices in order to attract a wider range of customers.

I. PROFITABILITY

- As can be seen from Exhibit V-7, many on-line database vendors are unprofitable.
- Only around 60% of the sample was prepared to comment on this issue, and of the 32 that did, only ten of the vendors were profitable, with a further three breaking even or of doubtful profitability.
- It is, however, interesting to note that in some cases relatively high levels of profitability are being achieved in specialist areas, particularly the financial sector.

EXHIBIT V-7

PROFITABILITY OF ON-LINE DATABASE VENDORS



- Vendors were also questioned on their estimates of how long it would take to achieve profitability. Only 16 vendors were able to comment on this.
- Five admitted to having no idea and the remaining eight estimated that it could be achieved within the next two to three years.
- Losses have been tolerated by vendors, in many cases because they wish to establish a strategic position in the market. Some feel it necessary to offer a service in order to maintain or extend business in other related areas.
- In France in particular, the government has especially subsidised the market in order to establish what is considered to be an activity of potential economic strategic significance.
- These subsidies are now being gradually withdrawn thus placing the vendors, particularly Telesystemes, under considerable pressure to become self-sufficient by 1986.
- A major profitability concern for publishers in this market is the need to balance revenues from on-line services against existing revenues from conventional products.
- For example, Chemical Abstracts suffered an accelerated rate of non-renewals for their printed journals following the introduction of their own on-line service.
- In general, profitability does appear to be within reach within the next two to three years for many services.
- An encouraging sign from the more developed U.S. market is that both the Dow Jones Retrieval Service and Mead Data Central are now operating profitably.

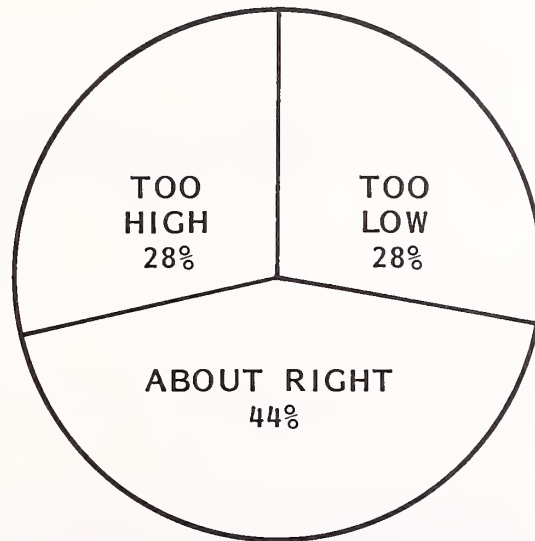
2. PRICING

- Raising prices is an obvious counter to loss-making operations. However, competitive pressures and the fear of adverse user reaction have held vendors back from this step.
- As was seen in Exhibit V-2, users rated the high cost of services as a serious deficiency. Care should be taken in the interpretation of this observation.
- End users seem prepared to pay a price for a computer service when genuine value is delivered. For example, many European users are prepared to pay for relatively expensive U.S.-based services in comparison to cheaper European-based alternatives.
- As one vendor commented, "When the service is good users don't complain about the price."
- Exhibits V-8 and V-9 show respectively the vendors' and users' assessments of pricing levels. These results show in general a large degree of agreement about pricing. France is the exception.
- Most concern about price levels being too high was expressed by the Italian vendors. Communications costs are one reason for this concern.
- A number of the U.K. vendors interviewed also expressed some dissatisfaction over BT's Packet-Switch Stream charges.
- INPUT considers that one of the keys to the "pricing" issue (and by implication profitability as well) is the need to add value to the basic services being provided.

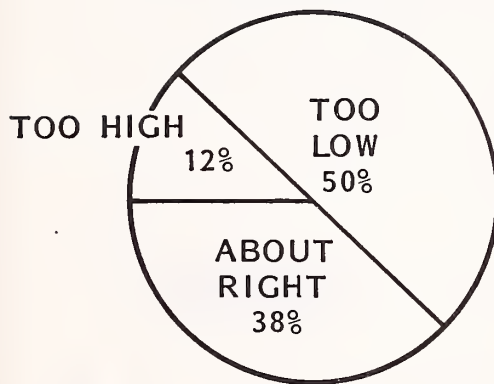
EXHIBIT V-8

VENDOR ATTITUDES TOWARDS PRICING

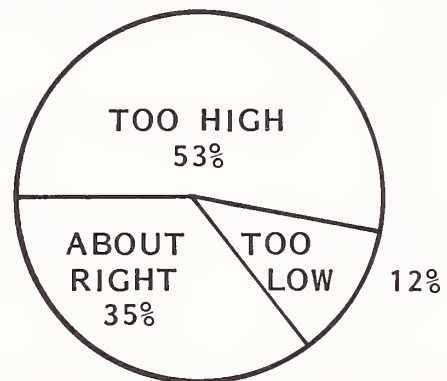
WESTERN EUROPE



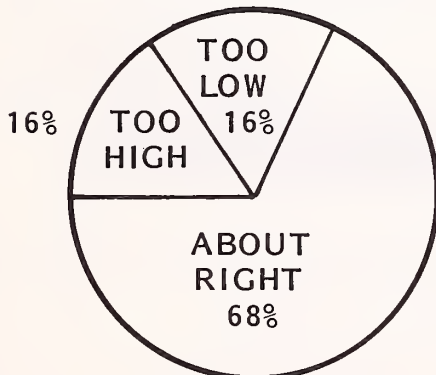
FRANCE



ITALY



UNITED KINGDOM



WEST GERMANY

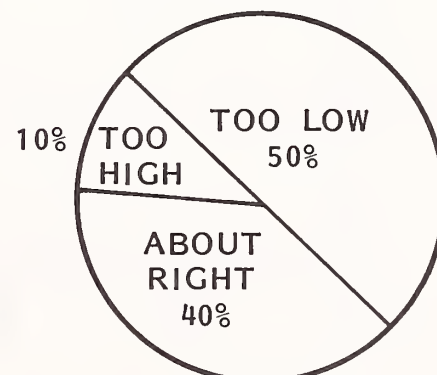
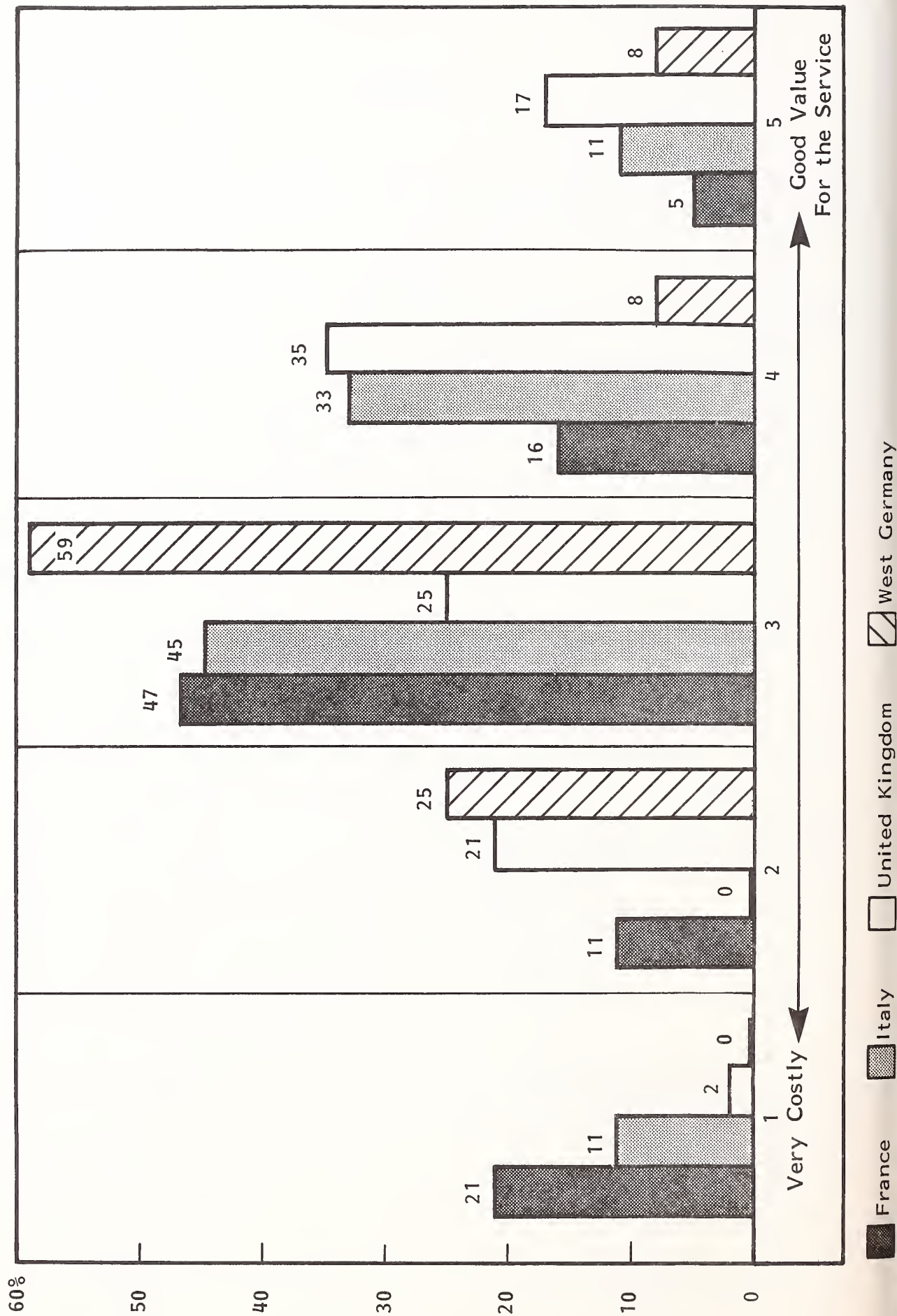


EXHIBIT V-9
USER SATISFACTION WITH PRICING LEVELS



- A basic structure can be suggested in which:
 - The basic raw data will always tend to have low value.
 - Processing (the application of software) turns the raw data into "information" and thus adds value to the data.
 - Additional services (e.g., consultancy) can leverage information into knowledge that can provide a second level of added value.
- Another key to the price that can be charged for on-line services lies in the nature of the use to which that data or information is to be put.
- It seems that the more the information is needed to support a decision or to conduct a transaction, then the higher the price it can command.
- The utility of immediacy of availability carries a high value in many circumstances, particularly in the financial world, and consequently users are prepared to pay a relatively high price for these services.
- In terms of pricing techniques, two observations should be noted.
- First, there is a widespread dislike of techniques committing users to a minimum expenditure over a certain time period.
- Vendors have used pricing techniques of this nature, minimum charges, annual commitments and the need to use proprietary terminals as a defensive measure against limited use.
- It seems that only amongst the more expensive financial services is it possible to adopt such marketing techniques.

- The second observation is the introduction of differential pricing by DIALOG for its KNOWLEDGE INDEX service mentioned elsewhere in this report.
- KNOWLEDGE INDEX provides access to the same databases resident on the DIALOG host, but at a lower price because it is restricted to evening and weekend work.

D. MARKET OPPORTUNITIES

I. ON-LINE DATABASE CRITERIA

- When evaluating new opportunities for on-line database services certain guiding principles need to be borne in mind.
- Basic characteristics of potential on-line database opportunity areas are:
 - The quantity of data is large and expensive to collect.
 - The data requires frequent and expert updating.
 - The data is unique.
 - No satisfactory alternative service is available.
 - The data is suitable for display on a VDU.
 - Users require access to specific facts rather than the need to review a large mass of material.
- The greater the degree to which the potential database characteristics meet these criteria, the more likely it is to be successful as an on-line database.

- In any new product assessment situation, the users' needs and the potential number of users must be thoroughly analysed.
- As mentioned in the previous section the type of use that the retrieved data is to be put is an important criterion of the likely value of the service.
- Information that is required to affect some immediate transaction or that will be used to support a direct decision will be of relatively high value.
- In contrast, data or information that is only supportive to making decisions in a longer term background sense will have a lower value.
- Vendors must also evaluate carefully the potential for value-added services, for these will offer greater potential for higher margin services.
- In the more consumer-oriented applications vendors need to investigate the degree to which the potential service can either:
 - Be subsidised by advertising or a commercial service (e.g., a banking transaction).
 - Be tied into or augment some other supportive service that already bears major elements of the cost.

2. AREAS OF OPPORTUNITY

- This study revealed three broad areas of opportunity of interest to current on-line database vendors:
 - Electronic publishing.
 - On-line selection and ordering for business products and services.
 - Consumer and home-based services.

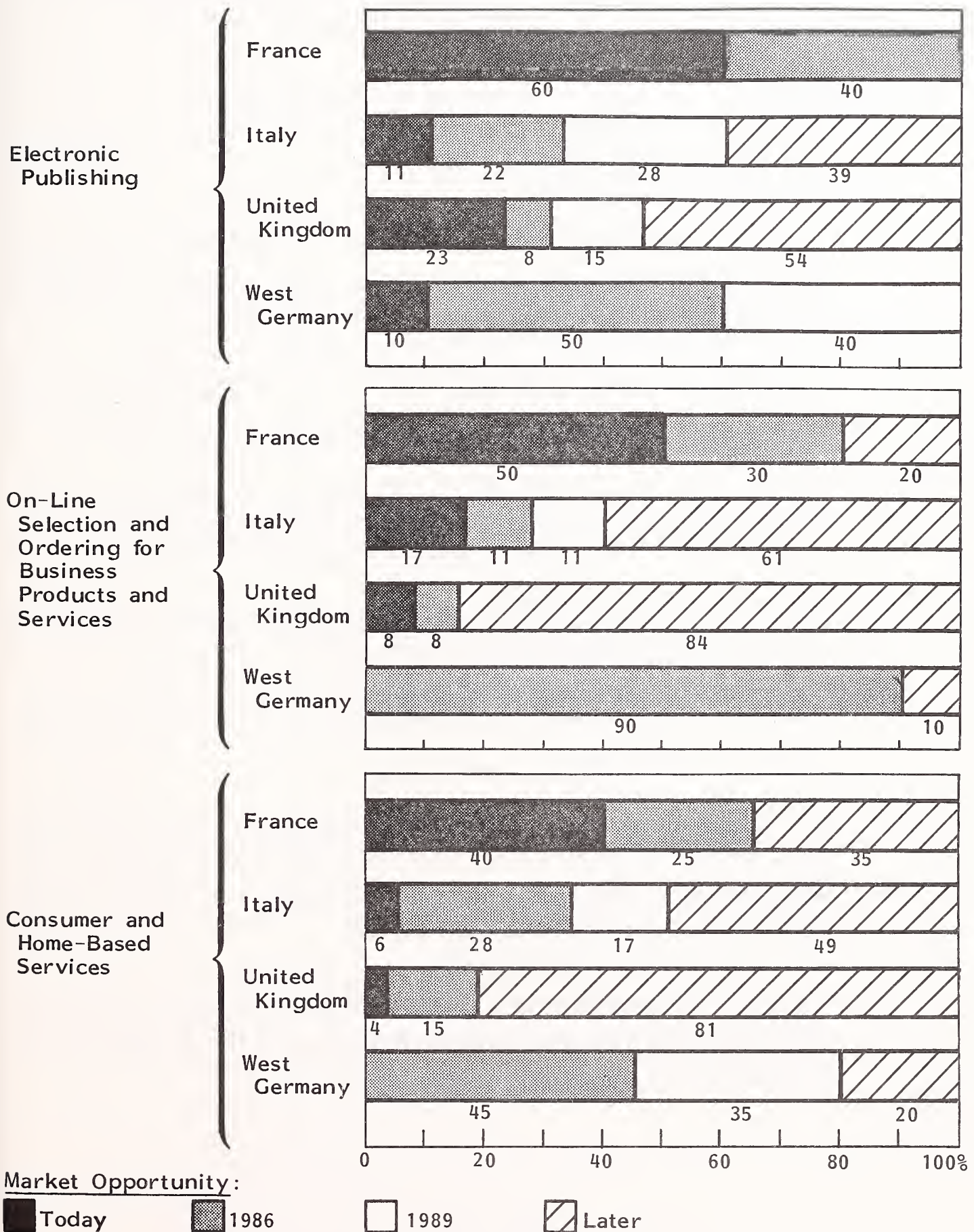
- Exhibit V-10 tabulates the vendors' assessment of these areas in terms of the expected timeframe in which they will represent a significant market opportunity.

a. Electronic Publishing

- There seems little doubt that this is one of the critical areas for on-line database services. Exhibit V-10 indicates a very positive attitude in France, but less so in the other countries, particularly Italy and West Germany.
- Some vendors expressed caution in respect of the likely overestimation of this market.
- VIDEOTEX was frequently mentioned by vendors in the context of electronic publishing. The success of the national VIDEOTEX service was seen as important to the development of this market.
- Many new participants are likely to become involved in this market area. Indications for European developments can be gained from the U.S. market, where organisations like CITIBANK and IBM, in its joint ventures with Sears Roebuck, CBS and Merrill Lynch, are portents of the future.
- As one would expect from applying the criteria discussed above in Section I, it is business and financial data that is largely the subject of these new developments.
- An interesting example outside these two areas is the provision of the Physicians' Desk Reference, which is basically an encyclopedia of drugs, on a service called Phycom.
- Fisher-Stevens Inc. operates Phycom, and offers on-line access to the contents of this publication, but is subsidised by pharmaceutical companies who advertise drugs on the system.

EXHIBIT V-10

VENDOR ASSESSMENT OF OPPORTUNITY AREAS



- An interesting feature is that advertisements are paid for on the basis of the actual exposure they get as measured by the host computer.

b. On-Line Selection and Ordering

- The general concept of on-line selection and ordering from a computerised database is not a new one.
- Successful systems have been implemented on a private basis (e.g., for the agents of mail order catalogue organisations like Otto Versand in Germany), but public services have not caught on yet.
- Vendor interest in this area was primarily for business products and services, and it is the level of interest in this area that is shown in Exhibit V-10.
- The strongest level of vendor interest was in France where a strong VIDEO-TEX movement increases awareness of this type of application.
- West German vendors also saw this as an important opportunity but one that is not likely to be realised before the 1986 timeframe.
- There was a more limited level of interest amongst Italian vendors and very little interest in the U.K.
- One of the strategic errors made by vendors who have attempted to offer this type of public service in the past has been this service's independence from other services. Consequently high startup and running costs must be covered during the inevitable slow buildup of revenues.
- There are not enough users to attract sufficient numbers of companies prepared to offer their products or services (because a fee is required), and a vicious circle is created.

- Some fundamental business factors that will be important in developing successful services in this area are:
 - Developing the service as an add-on or adjunct to an existing service or operation in order to reduce its exposure to low initial revenues.
 - Seeking out high payoff opportunities, implying vigorous examination of the proposed business products or services being offered.
- An example of this type of service is COMPUTACAR offered by Thomson's in the UK. Originally it was consumer service offering an on-line database of used cars for sale by private individuals. It was not successful.
- The real high-payoff application was in the dealers' trade in used cars. Dealers have a high need to keep used cars moving regularly across their forecourts, even if they are not sold to customers. Additionally they need to keep a balanced mix of models.
- In consequence an on-line database of available used cars in the "trade" and their location has proven to be a much-needed service and thus the basis of a highly successful on-line database application.
- Other applications areas mentioned by vendors were:
 - Software sales from a database catalogue.
 - The WILEY book catalogue available through the DIALOG service.
 - Drugs and medical supplies for general practitioners.

c. Consumer and Home-Based Services

- As can be seen from Exhibit V-10, considerable caution existed amongst vendors, on their attitude towards this broad area of opportunity.
- The experience in the U.S. with services like COMUSERVE and the SOURCE, and the slow build up of PRESTEL in the U.K. have not encouraged vendors in general to be enthusiastic about prospects in this area.
- One of the strongest concerns was pricing and the reluctance of the general public to pay an economic charge for on-line database services.
- As discussed elsewhere, INPUT does not believe that the market can be supported in this way. INPUT believes that advertising or other subsidies will be required.
- Despite these reservations, a number of vendors did see opportunities in this market. This was particularly so in France where the publicity campaigns for TELETEL and MINITEL are clearly having some effect.
- Certainly most vendors viewed this potential area primarily in terms of VIDEOTEX applications rather than those for personal computers. This perhaps reflects the relatively slow acceptance of personal computers in most European countries except the U.K.
- Particular types of application mentioned as opportunities by vendors for the general consumer or home user were:
 - On-line credit authorisation (as a necessary pre-condition for successful teleshopping systems).
 - Home banking services.

- Sales of software from on-line data base catalogues.
- Scientists working at home.
- The recently announced KNOWLEDGE INDEX service from DIALOG is aimed at this last area.
- The much-discussed "estate agents" area was used by one vendor as an example of the type of application unlikely to get off the ground in the near future.
- In contrast, better opportunities may lie in developing existing commercial services that have already become well-established. For example, the tour company VIDEOTEX systems have been extended to home use.

E. MARKET DEVELOPMENT

- Many on-line database vendors do not think that the market for their services has grown sufficiently fast.
- Given the rapid development of the overall market, it is probably the vendors that are currently running unprofitable services that are inclined to this view.
- These unprofitable services tend to be bibliographic services aimed at librarians, scientists and other researchers.
- Various reasons have been put forward for this lack of market development.
- Societal issues like copyright law, data privacy legislation and the threat of transborder data flow regulations have all been put forward as potential barriers to development. These were discussed in Chapter IV.

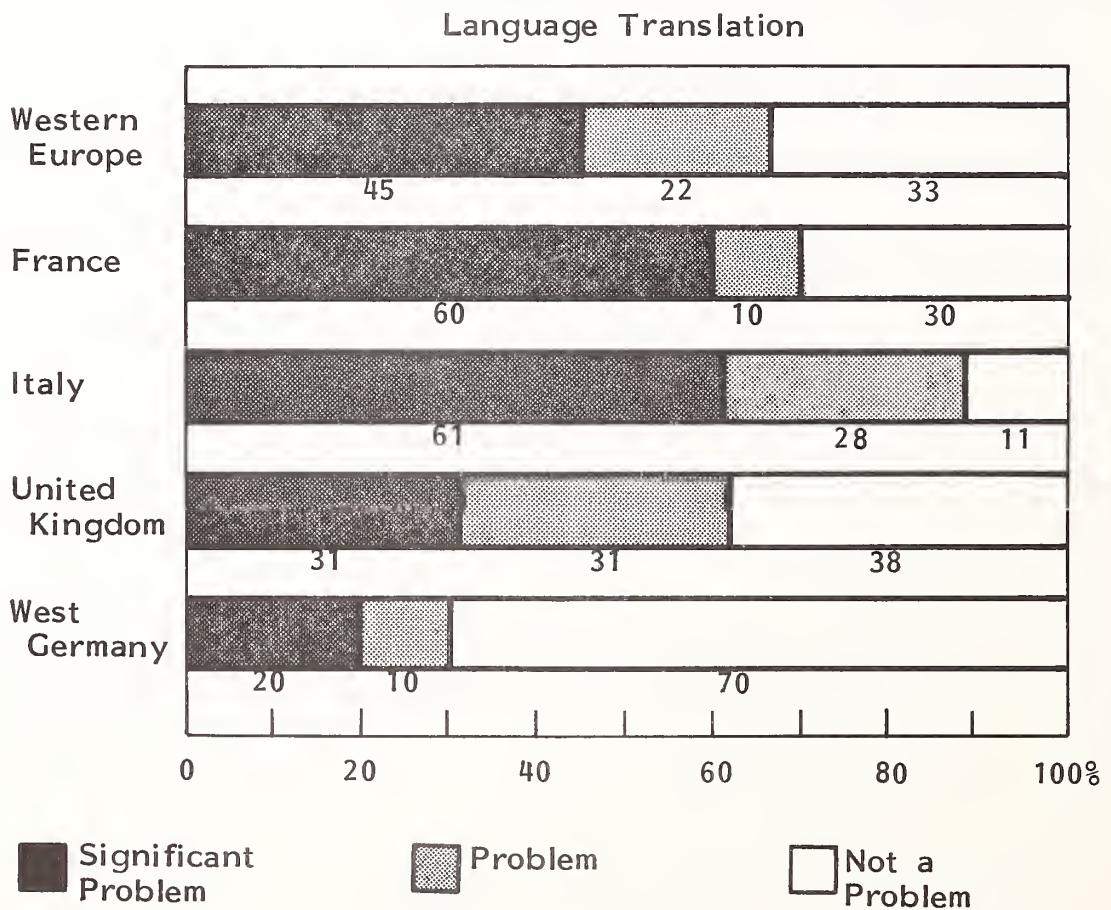
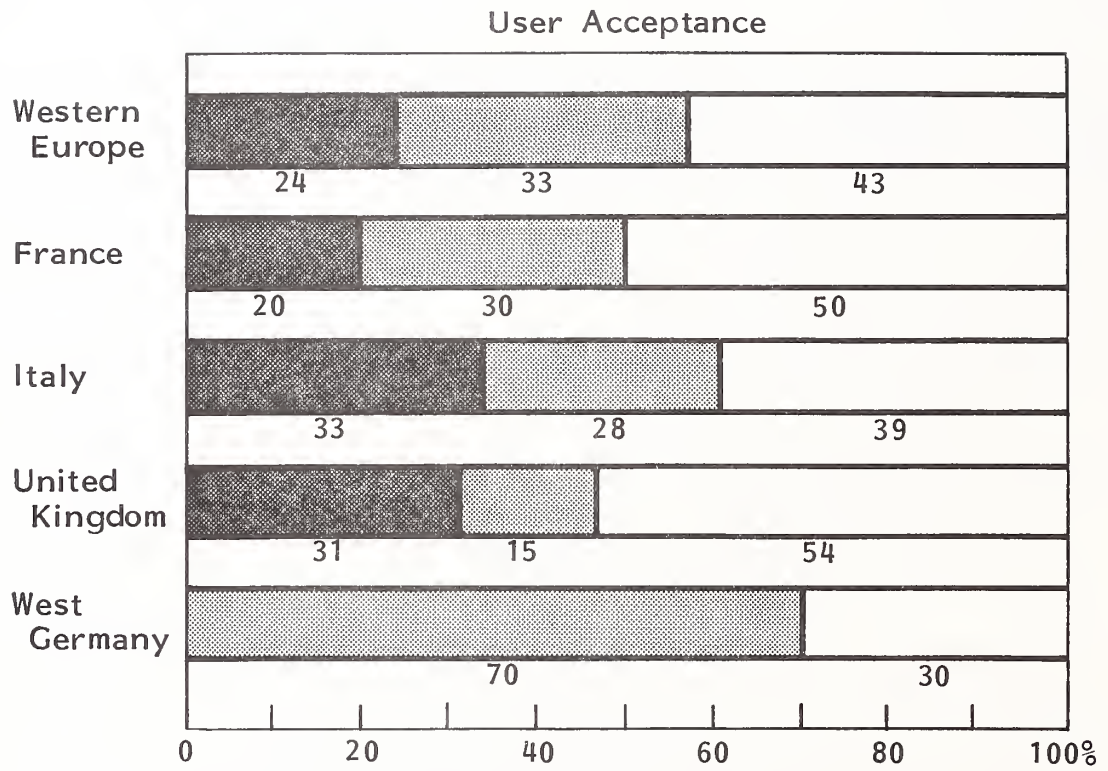
- A lack of marketing effort on the part of vendors has also been raised as a problem by the industry.
- Over half the vendors felt that more market conditioning was required to make potential users more aware of the benefits of using on-line database services.
- Only 20% of the vendors felt that this was not the case, that the marketing efforts were more than satisfactory.
- The vendors' comments, some examples of which are given in Exhibit V-11, give some indication of the broad range of views on this subject.
- Although it is true that vendors of unprofitable services have probably found it difficult to allocate sufficient funds to marketing, there is also evidence, in some cases, of a lack of management direction to that commitment. An example is the vendor that commented, "Those clients who need the data will sign up".
- One of the aims of marketing is to achieve an increase in user acceptance.
- Exhibit V-12 shows the tabulated results of the vendor survey in respect of user acceptance as a market development barrier.
- The rating of user acceptance as at least a problem by over half the vendors in the sample supports the observation that marketing efforts are generally insufficient.
- This seems particularly to be the case in Italy and the U.K., where around one-third of all the vendors surveyed felt user acceptance was a significant problem.

EXHIBIT V-11

VENDOR COMMENTS ON MARKET CONDITIONING

- People are not information aware; we must sell the need to general management, not the specialists.
- The market knows only a little about the possibilities of database services.
- Aggressive marketing is a must.
- We need to do a lot of marketing; we have a very large sales force; we use conferences, direct mail etc.
- Market growth is occurring naturally as users find the need for data and come to appreciate the benefits of on-line data.
- Those clients who need the data will sign up.
- More publicity is required on what on-line databases can do.

EXHIBIT V-12
VENDOR ASSESSMENT OF POTENTIAL
MARKET DEVELOPMENT BARRIERS



- Another issue particular to Europe and its multiplicity of languages is that of language translation.
- Exhibit V-II also contains the tabulated results of the vendor assessment of this issue as a market development barrier.
- Two-thirds of the sample rated language translation as a problem; very nearly half rated it as a significant problem.
- French and Italian vendors rated this most heavily as a problem area. It is interesting to note that West German vendors rated it the lowest, despite the prevalence of English in database content and command languages.
- For the specialist user the widespread use of English is probably not a real problem, judged on the remarks made by vendors. Typical of these was "language should be more of a problem than it is, but people have to read English to do their job".
- As the boundaries of on-line database use spread wider and wider into more general applications it is a possibility that language translation will prove to be more of a problem than it is today.

VI CONCLUSIONS AND RECOMMENDATIONS

VI CONCLUSIONS AND RECOMMENDATIONS

A. KEY INDUSTRY TRENDS

I. THE TRADEABLE INFORMATION SECTOR

- The advanced western countries are moving, some more quickly than others, towards an economic structure in which information is becoming an increasingly important input to the economy.
- Part of this process is the increasing significance of a tradeable information sector in the economy.
- The market for on-line database services is a rapidly growing component of that sector.
- INPUT estimates that in Western Europe today the market for on-line database services has already reached \$350 million and is estimated to reach a level of \$1.27 billion by 1989.
- This increasingly large and economically significant market will continue to open up potential new areas of opportunity.
- Information services companies are well placed to profit from these opportunities but a thorough understanding of the strategic directions in this marketplace is mandatory.

- Commitment to meeting the needs of this market will be vital to ensure success.

2. THE VALUE OF INFORMATION

- Generally, raw or unprocessed data will continue to have little intrinsic value and consequently will not be able to command a high price.
- In contrast, information or processed data will increasingly be perceived to have a high value.
- The principal factor that will determine information's value, and hence its price, will be the degree of processing undertaken and the amount of value added to the source data. Other pricing factors will be the information's uniqueness and level of demand.
- A major factor that will increase demand for information is the increasing chaos caused by large amounts of raw unprocessed data.
- Users faced with processing increasing quantities of data will demand more refined and processed data, i.e., useable information.
- The supply of data will become less and less important, the ability to select the required information increasingly important.
- Factors that are likely to add value to on-line database services include:
 - Fast access to large quantities of data that are expensive to collect.
 - The requirement for frequent and expert updating.
 - The uniqueness of the database.
 - The ease with which the required information can be found.

- The value of information will also be a function of the use to which it is to be put. Factors that will tend to increase its value are:
 - The need for information to affect an immediate transaction.
 - The need for information to support a direct decision.
- In contrast, less value will be attributed to data that is only required for long-term background tasks.

3. PRICING TRENDS

- The key trend in the industry (towards high perceived value in information (or processed data) as opposed to raw unprocessed data) will manifest itself strongly in the pricing area.
- Vendors must be sure that their pricing decisions are based primarily on an assessment of value to the user and not on cost of service.
- Differential pricing (as introduced by DIALOG for their KNOWLEDGE INDEX application) may become more popular as attempts are made to market existing databases to new classes of customers.
- INPUT considers that these attempts will not achieve a great deal of success, as it will be impractical to maintain high differentials in most markets.
- Vendors should be very cautious in the adoption of such techniques and should be sure of these techniques' appropriateness to the market in question.
- Subsidisation of services will become an essential element in extending the use of on-line databases outside currently defined markets.

- This subsidisation can come in the form of advertising or through commercial services like banking or on-line order-taking systems.
- To help develop subsidisation strategies, vendors should examine the possibility of using joint ventures or partnerships with organisations offering complementary services.

B. EXPANDING OPPORTUNITIES

- The development of the tradeable information sector and its increasing economic significance ensures that the market for on-line database services will continue to expand.
- The continuing technological advance within the information processing industry, and in particular the software and hardware developments discussed in this report, will provide technical solutions to expanding market opportunities.
- Vendors must evaluate not only the opportunity to expand and develop existing services, but also the opportunities to develop into completely new areas.

I. VALUE-ADDED SERVICES

- There will be an increasing emphasis on additional services to augment basic on-line database products.
- These additional services will enhance the information and its delivery and represent an opportunity for high-value-added products.
- Some example of additional services that could be provided to basic on-line data base products are:

- Any additional processing that refines raw data into information.
 - The combination of data from several different sources.
 - The provision of spreadsheet software on the user's PC to manipulate extracted data (e.g., from an econometric database).
 - Decision support software on host or PC.
 - The provision of more expert advice or consultancy services (information brokerage).
 - Training services.
 - Additional custom-built software.
 - Simplified services for nonexpert users.
- Vendors must search out end-users' needs and meet them with additional value-added services. Simply supplying data will become an activity of decreasing importance.

2. NEW MARKETS

- Perhaps the biggest challenge facing vendors is the development of completely new markets for on-line database services.
- New types of on-line databases are emerging to meet the needs of completely new types of database users, for example the JETPLAN database for airline pilots.

- These new classes of potential user will have different needs and different requirements from the typical on-line database user today.
- Vendors must adapt to this new situation in order to participate effectively and profitably in these new markets.
- New areas of opportunity are likely to develop in the general areas of:
 - Electronic publishing.
 - Transaction-oriented information databases.
 - Decision-oriented information databases.
- Electronic publishing will primarily offer opportunities in the immediate term in the areas of business and financial information.
- Subsidisation of the service will often be the key to a profitable operation for professional services; it is likely to be mandatory for domestic services.
- Vendors should seek out the necessary partnerships or agreements to provide sponsorship, either through advertising or in combination with some other service.
- Transaction-oriented databases will give access to information that directly supports a transaction such as making a purchase order, mailing potential customers, etc.
- These databases will contain information, for example products and prices, or names and addresses. (There is some overlap here with electronic publishing).
- Decision-oriented databases will provide information that is directly supportive to a decision, for example weather conditions, air speeds, etc. An example is an airline pilot calculating fuel needs on JETPLAN.

- Many of these new opportunities are likely to be met by start-up organisations created by entrepreneurs who spot a particular market niche.
- Information Services vendors wishing to participate in these new markets must activate strong market and product opportunity programmes.
- Participating vendors will have to be inventive, experimental and take some risks in their approaches to these new markets.
- Marketing skills will be at a premium, both in identifying new opportunities in the first place, and then exploiting them.

C. STRATEGIC DIRECTIONS

- One of the most critical trends in the industry is the increasing importance of participants who control the information, i.e., who "own" the databases.
- There is likely to be a corresponding decline in the importance of those vendors who simply provide on-line services.
- Marketing is becoming the key priority for successful on-line database services for two principal reasons:
 - The provision of the on-line service is becoming a utility item that is not particularly unique or strongly differentiated from those of competitors.
 - The increasing emphasis on value-added services and new market opportunities emphasises marketing skills over technical skills.

- This trend is illustrated by the case of DERWENT, a database "owner" that is evolving into an on-line database provider that:
 - Will use multiple hosts.
 - Will actively market its own services.
- The implication for so-called supermarket hosts is that their continued survival becomes increasingly dependent on their ability to offer the most highly efficient data processing services. This is unlikely to be sufficient condition in the long term.
- Increasingly the market will be controlled by organisations that own and market databases and not by those that simply provide on-line data processing facilities.
- Already organisations that can be described as broad-scale information companies are emerging as important participants in the market. These are companies that often have publishing or other information-generating activities, for example Pergamon-Infoline, and Dunn and Bradstreet.
- For these companies, specialisation and dedication to their served markets for information products and services is fundamental and the data processing facilities are secondary.
- In the light of these strategic directions, RCS companies must evaluate their own approach very carefully.
- An RCS vendor can aim to offer the most efficient data processing facility for on-line database use. It can then participate solely as delivery mechanism for other vendors' databases.

- A weakness in this approach is the possibility of more vertical integration amongst database owners.
- Alternatively an RCS vendor can aim to participate as a database owner itself, either through acquisitions, partnerships or through setting up its own operation.
- In either case dedication to the market will be a prerequisite for long-term success. Specialist divisions dedicated solely to this particular business area will be essential.
- CISI and DATASOLVE are both examples of RCS companies that have adopted this approach.

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

A. DATABASE

- DATABASE - An organised collection of information. The database may contain a collection of time series and numeric data, a collection of indexed or full-textual data, or a combination of both. Some databases are beginning to contain textual and image data. Databases contain principally historical information, but they may also contain real (or near-real) time data and, in some circumstances, forecasted data. Databases may be either in printed form or, increasingly, automated and machine-processible form.
- ON-LINE DATA BASE - Databases that are available for on-line access by users through information services where access is by computer terminal, personal computer, or a micro-controlled word processing system.
- DATABASE VENDOR - Databases are produced and maintained by vendors that frequently produce the database as a by-product of electronic publishing. In addition to offering the data in the form of printed publications, the vendor offers the computer-readable database either directly (often on-line) or, more frequently, through information services vendors. For using databases on-line, database vendors charge subscription fees, collect use royalties, or do both. Charges may either be direct to the end user or through licensing arrangements with information services vendors.

- INFORMATION SERVICES VENDORS - Information services vendors offer databases that they build and maintain themselves, or license from database vendors, or both.
- SDI SERVICES - SDI or Selective Dissemination of Information are off-line services in which a user nominates topics or questions that are automatically searched on the occasion of each update of the database.
- GREY LITERATURE - Is a term used to describe the "non-conventional" or unpublished documents that are produced in nearly every field. Typical of this kind of document are research reports, dissertations, conference proceedings, technical instructions, and official bulletins. Generally they are produced in relatively small numbers of copies and are neither published nor distributed commercially.
- VIDEOTEX - The general name given to the concept of distribution of information contained in databases over the telephone system using television as the display medium. Information is presented in page format and operation is interactive.
 - The various national Videotex systems go under different names in each country:
 - Prestel in the U.K.
 - Teletel in France.
 - Bildschirmtext in West Germany.*
 - Videotel in Italy.*

*These systems are based on Prestel.

B. INFORMATION SERVICES

- INFORMATION SERVICES - The provision of:
 - Data processing functions using vendor computers (processing services).
 - The provision of database access where computers perform an essential role in the processing or conveyance of data.
 - Services that assist users to perform functions on their own computers (software products and/or professional services.)
 - A combination of hardware and software, integrated into a total system (integrated systems).

I. REVENUE

- All revenue and user expenditures reported are available (i.e., noncaptive) revenue, as defined below.
- NONCAPTIVE INFORMATION SERVICES REVENUE - Revenue received for information services provided within the U.S. from users who are not part of the same parent corporation as the vendor.
- CAPTIVE INFORMATION SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendors.
- OTHER REVENUE - Revenue derived from lines of business other than those defined above.

2. SERVICE MODES

- PROCESSING SERVICES - Remote computing services, batch services, and processing facilities management.
 - INTERACTIVE (timesharing) - Characterised by the interaction of the user with the system, primarily for problem-solving timesharing, but also for data entry and transaction processing: the user is on-line to the program/files.
 - REMOTE BATCH - Where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.
 - DATA BASE - Characterised by the retrieval and processing of information from a vendor-provided database. The database may be owned by the vendor or a third party.
 - USER SITE HARDWARE SERVICES (USHS) - These offerings provided by RCS vendors place programmable hardware on the user's site (rather than in the EDP center). USHS offers:
 - Access to a communications network.
 - Access through the network to the RCS vendor's larger computers.
 - Significant software as part of the service.
 - BATCH SERVICES - This includes data processing performed at vendors' sites of user programs and/or data that are physically transported (as opposed to electronically by telecommunication media) to and/or from those sites. Data entry and data output services, such as

key punching and computer output microfilm processing, are also included. Batch services include expenditures by users who take their data to a vendor site that has a terminal connected to a remote computer for the actual processing.

- PROCESSING FACILITIES MANAGEMENT (PFM) (Also referred to as "resource management" or "systems management") - the management of all or a major part of a user's data processing functions under a long-term contract (more than one year). This would include both remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, operate, and own the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

- Processing services are further differentiated as follows:

- Function-specific services are the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but cut across industry lines. Most general ledger, accounts receivable, payroll, and personnel applications fall into this category. Function-specific database services where the vendor supplies the database and controls access to it (although it may be owned by a third party) are included in this category. General-purpose tools such as financial planning systems, linear regression packages, and other statistical routines are also included. However, when the application, tool, or database is designed for specific industry use, then the service is industry specific.
- Industry-specific services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or as an applications "tool" that the user employs to produce a unique solution. Specialty applications can be either business or scientific in orientation. Industry-specific database services, where the vendor supplies

the database and controls access to it (although it may be owned by a third party), are also included under this category. Examples of industry specialty applications are seismic data processing, numerically controlled machine tool software development, and demand-deposit accounting.

- Utility services are those where the vendor provides access to a computer and/or communications network with basic software that enables users to develop their own problem solutions or processing systems. These basic tools include terminal-handling software, sorts, language compilers, database management systems, information retrieval software, scientific library routines, and other systems software.
- SOFTWARE PRODUCTS - This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organisations other than the package vendor are counted in professional services. There are several subcategories of software products:
 - APPLICATIONS PRODUCTS - Software that performs processing that services user functions. They consist of:
 - CROSS-INDUSTRY PRODUCTS - Used in multiple-user industry sectors. Examples are payroll, inventory control, and financial planning.
 - INDUSTRY-SPECIFIC PRODUCTS - Used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand-deposit accounting and airline scheduling.

- SYSTEMS PRODUCTS - Software that enables the computer/communications system to perform basic functions. They consist of:
 - SYSTEMS CONTROL PRODUCTS - Function during applications program execution to manage the computer system resource. Examples include operating systems, communication monitors, emulators, and spoolers.
 - DATA CENTER MANAGEMENT PRODUCTS - Used by operations personnel to manage the computer system resources and personnel more effectively. Examples include performance measurement, job accounting, computer operations scheduling, and utilities.
 - APPLICATION DEVELOPMENT PRODUCTS - Used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Examples include languages, sorts, productivity aids, data dictionaries, database management systems, report writers, project control systems, and retrieval systems.
- PROFESSIONAL SERVICES - Made up of services in the following categories:
 - EDUCATION SERVICES - EDP products and/or services--related to corporations, not individuals.
 - CONSULTING SERVICES - EDP management consulting and feasibility studies, for example.
 - SOFTWARE DEVELOPMENT - Including system design, contract programming, and "body shopping".

- PROFESSIONAL SERVICES FACILITIES MANAGEMENT (PSFM) - The counterpart to processing facilities management, except that in this case the computers are owned by the client, not the vendor; the vendor provides people to operate and manage the client facility.
- INTEGRATED SYSTEMS (Also known as Turnkey Systems) - An integration of systems and applications software with hardware, packaged as a single entity. The value added by the vendor is primarily in the software. Most CAD/CAM systems and many small business systems are integrated systems. This does not include specialized hardware systems such as word processors, cash registers, and process control systems.
- Integrated systems revenue in this report is divided into two categories:
 - INDUSTRY-SPECIFIC systems, i.e., systems that serve a specific function for a given industry sector such as seismic processing systems, automobile dealer parts inventories, CAD/CAM systems, discrete manufacturing control systems, etc.
 - CROSS-INDUSTRY systems, i.e., systems that provide a specific function that is applicable to a wide range of industry sectors, such as financial planning systems, payroll systems, personnel management systems, etc.
- Revenue includes hardware, software, and support functions.

APPENDIX B: INTERVIEW AND SAMPLE PROFILE

APPENDIX B: INTERVIEW AND SAMPLE PROFILE

A. VENDORS

- The respondent sample included specialist on-line database vendors, general RCS or information services vendors and specialist database creators including publishing organisations.
- In total some 51 organisations were interviewed on a face-to-face basis.
- The profile by type of organisation and country is shown in Exhibit B-1.

B. USERS

- The profile of the user sample is shown in Exhibit B-2.
- The largest individual grouping, representing something just under 40% of all users in the sample, was education and libraries. This was not surprising given the very strong interest in the use of on-line database technology within this user community.
- The second-largest group was manufacturing, representing very nearly one-quarter of the sample (23%).

EXHIBIT B-1

PROFILE OF VENDOR INTERVIEWS

	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY	TOTAL
Specialist On-line Data Base Organizations	2	2	6	5	15
RCS Vendors	4	8	5	3	20
Specialist Organizations	4	8	2	2	16
Totals	10	18	13	10	51

EXHIBIT B-2

PROFILE OF USER SAMPLE

PRINCIPAL ORGANISATION ACTIVITY	FRANCE	ITALY	UNITED KINGDOM	WEST GERMANY	TOTAL
Education Library	7	2	22	10	41
Government	-	-	10	1	11
Health Care	3	1	3	2	9
Manufacturing Industry	9	6	5	5	25
Services	-	3	16	-	19
Utilities Including Energy	1	-	3	-	4
Total	20	12	59	18	109

APPENDIX C: VENDOR QUESTIONNAIRE

VENDOR QUESTIONNAIREGENERAL

1. What is your Company's role in the on-line data base market? (e.g. creator, host, network etc.)

2. What computer systems are used?

A. Owned/operated _____

B. Hosts used _____

3. What type of communications do you use to enable access to information?

NOW FUTURE

A. Private network

☐ ☐

B. Packet switched network (public)

☐ ☐

C. Value added network (e.g. TYM NET)

☐ ☐

D. EURONET-DIANE

☐ ☐

E. VIDEOTEX

☐ ☐

F. Other (Please name)

☐ ☐

4. Do you see provision of on-line information services as:

NOW FUTURE

Your main-line business

☐ ☐

A support to your main-line business

☐ ☐

Incidental to your main-line business

☐ ☐

A radical change to your way of doing business

☐ ☐

Comments: _____

5. What is your attitude towards providers of information brokerage services?

- Important part of extending use of data-base ☐

- Not important ☐

- A threat to the service provider ☐

- Other (please state) ☐

Comments: _____

6. Do you believe that current pricing standards for on-line information are generally:

Too high ☐

Too low ☐

About right ☐

Comments: _____

7. See separate sheet.

Please complete for each individual data base provided by vendor.

COMMUNICATIONS TRENDS

8. What do you believe will be the impact of communication technology developments in Europe?

	HIGH	MEDIUM	LOW
A. Packet switched services (public)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Private VAN (value added network)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Local area Networks (e.g. ETHERNET)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

9. How important do you believe EURONET DIANE is to the development of the market?

Comments: _____

10. Do you see any significant barriers in the communications area to the development of the market in Europe?

	SIGNIFICANT	PROBLEM	NOT
A. Communication standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
B. Quality of transmission service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
C. Communications costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			

11. To what extent do you believe VIDEOTEX technology will contribute towards the development of the market?

Important	<input type="checkbox"/>	A help	<input type="checkbox"/>
Just another mode	<input type="checkbox"/>	Not at all	<input type="checkbox"/>
Comments _____			

TECHNOLOGY TRENDS

12. How important to you are the following technology trends in the development of on-line data base services?

	HIGH	MEDIUM	LOW
A. More cost effective storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
B. VIDEODISK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
C. Image Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
D. Shift from dedicated terminals to PC's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
F. Better network management software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			

ENHANCEMENT OF SERVICES

13. How important to you are the following topics in relation to the development of your on-line data-base services?

	HIGH	MEDIUM	LOW
A. More user friendly software for search and retrieval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
B. Common command/retrieval languages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
C. Simplified sign-on procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
D. The provision of data management/private data-base services for integration of internal/external data sources:			
On your host system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On an in-house system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Providing Decision Support Services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
F. User training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
G. Full text bibliographic services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
H. On-line document ordering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
I. Alternative delivery mechanisms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments (please state) _____			
J. Switching from host-to-host (easily)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
K. Multiple file searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			
L. Standardisation of manuals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____			

MARKET TRENDS

14. Do you see the marketing of on-line data base services to be oriented over the next three years:

	HEAVILY	PARTLY	NOT
- primarily nationally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Europe wide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- U.S.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Other markets			
.			
.			

Comments _____

15. Do you see any significant barriers to the development of the market in Europe? e.g.

	SIGNIFICANT	PROBLEM	NOT
- language (translation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- trans-border data flow regs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Data privacy laws	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- User acceptance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- union activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- other			

Comments _____

16. Copyright - do you see inadequacies in protection by Copyright laws as a problem in making information available through on-line services?

- Serious problem with no obvious solution	<input type="checkbox"/>
- a problem to be overcome by contracts	<input type="checkbox"/>
- mainly a pricing problem	<input type="checkbox"/>
- not significant	<input type="checkbox"/>

Comments _____

17. Of all the current participants in the development of on-line information services, how do you rate their significance in the future?

	VERY	SOME	LITTLE
Government or its agencies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PTT's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Publishing companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TV companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Network Services Companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specialist on-line companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments _____

18. What do you believe is the current size of the national market for the particular type of on-line data base service that you provide?

and: how fast do your believe it will grow

	2X	3X	4X	MORE
by 1986	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
by 1989	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments _____

19. Do you think that more market conditioning (e.g. through advertising) will be necessary before a significant increase in use of on-line data base can be achieved?

- Yes	<input type="checkbox"/>
- No	<input type="checkbox"/>
- Don't know	<input type="checkbox"/>

Comments _____

MARKET OPPORTUNITIES

20. What is your opinion on new areas of opportunity for on-line data base services?

	NOW	'86	'89	LATER
. Distribution channel for publishers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____				
. Home based personal computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments _____				
. On-line product or service selection/ordering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Travel agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estate agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industrial/business products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consumer products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other				
Comments _____				
. Any other areas you consider to be a particular area of opportunity.				
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

VENDOR QUESTIONNAIREINDIVIDUAL DATA BASE

7. Please complete a separate sheet for each individual data base.

A. Name of Data Base: _____

B. Description of Contents: _____

C. Type: Numeric: _____

Text Abstract: _____

Full Text: _____

D. Source: _____

E. Date when Data Base was first created: _____

F. Country of Origin: _____

G. Frequency of Update: _____

H. What enquiry system is used to access the Data Base:

I. What other services are provided: _____

(e.g. printed output, microfilm graphics, computation) _____

J. Are facilities provided for private data-bases (i.e. extracted on host system or on in-house system):

K. How is the user charged for the overall service (please provide price list if available):

L. How are revenues from users split (where appropriate) between:

Provider _____ %

Host _____ %

Network _____ %

M. USAGE of system

	<u>1983</u>	<u>1986</u>
No. of users	_____	_____
Revenue	_____	_____
Average user active time on system, per session:	_____	_____
per month:	_____	_____

N. What percentage of revenues derives from foreign markets:

O. Is the Data Base service profitable

	YES	NO
If yes: Up to 5%	<input type="checkbox"/>	<input type="checkbox"/>
5 - 15%	<input type="checkbox"/>	<input type="checkbox"/>
15%+	<input type="checkbox"/>	<input type="checkbox"/>

If NO: Anticipated time to break even: _____

P. Would more vertical integration (i.e. between Data Base Provider, Host, Network) improve profitability (if possible)

Q. What other data-bases or services do you consider to be competitive:

R. Do you have a brochure or sales material on this Data Base service that you can give to us.

APPENDIX D: USER QUESTIONNAIRE

PLEASE RETURN COMPLETED FORM TO :

PETER LINES
 INPUT LTD
 35 PICCADILLY
 LONDON W1V 9PB

01-439-8985

BACKGROUND INFORMATION

NAME : _____

POSITION : _____

COMPANY : _____

ADDRESS : _____

TELEPHONE NO : _____

If you would like a summary of the results of this survey please tick this box. ☐

How many people are employed in your department? _____

What is the total number of people employed in your company? _____

What is the main activity of your company/organisation? _____

What is the main activity of your department? _____

- . If you are a current user, or planning within the next twelve months to become a user, of on-line data bases or VIDEOTEX systems (eg PRESTEL, TELETEL, BILDSCHIRMTEXT type systems) please answer all questions, with the exception of Q2, which you feel are relevant to your knowledge and experience of these systems.

- . If you are not planning to become a user please answer only Questions 1, 2 and 3.

1. Are you currently using or planning to use (within the next year) any on-line data base services including VIDEOTEX type systems?

	<u>YES</u>	<u>PLANNING</u>	<u>NO</u>
Personal use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Through a member of your department	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal librarian service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External information broker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please answer this next question only if you are not a user or not planning to be a user of on-line base services?

2. What are your reasons for not using or planning to use on-line data base services?

	on-line data base services	VIDEOTEX
. No need	<input type="checkbox"/>	<input type="checkbox"/>
. No relevant services	<input type="checkbox"/>	<input type="checkbox"/>
. Costs are too high	<input type="checkbox"/>	<input type="checkbox"/>
. Communication costs are too high	<input type="checkbox"/>	<input type="checkbox"/>
. Services are too complicated	<input type="checkbox"/>	<input type="checkbox"/>
. Lack of available intermediary or information brokerage to supply data	<input type="checkbox"/>	<input type="checkbox"/>
. Other (Please state)		

3. Please indicate areas of professional interest to you in the table below :

	HIGH	MEDIUM	LOW
<u>BUSINESS INFORMATION</u>			
Securities and Commodities (stock exchange)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic/current data on companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Economic & financial time-series data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commercial credit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consumer credit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Credit card verification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) _____			
<u>MARKETING</u>			
Market research data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Demographic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Address lists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) _____			
<u>INDUSTRY-SPECIFIC</u>			
Chemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Petrochemicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estate agents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Travel and entertainment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) _____			
<u>BIBLIOGRAPHIC</u>			
Business abstracts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
News (business)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Scientific and Technical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional			
Medical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legislative/executive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jurisprudential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Notarial/accountancy law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) _____			
Other (please specify) _____			
<u>OTHER</u>			
Non-business news	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resources e.g. oil, gas etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify) _____			

4. Please name the service or services that you are using or planning to use :

<u>NAME OF SERVICE</u>	<u>HOST</u>	<u>NETWORK</u>	<u>TERMINAL</u>	<u>USING/PLANNING</u>
a) _____	_____	_____	_____	_____
b) _____	_____	_____	_____	_____
c) _____	_____	_____	_____	_____
d) _____	_____	_____	_____	_____
e) _____	_____	_____	_____	_____

5. How would you rate your overall level of satisfaction for the services that you use on a scale of 1 (low) to 5 (high)?

<u>Quality of data/information in the data base</u>	<u>Ease of use</u>	<u>Overall service</u>
a) _____	_____	_____
b) _____	_____	_____
c) _____	_____	_____
d) _____	_____	_____
e) _____	_____	_____

6. What do you consider to be the best features of on-line data base services?

In order of priority :	i) _____
	ii) _____
	iii) _____

7. What do you consider to be the most serious deficiencies of on-line data base services?

In order of priority :	i) _____
	ii) _____
	iii) _____

8. How important are the following features or possible features of on-line data base services to you?

	HIGH	MEDIUM	LOW
. Provision of printed output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Provision of microfilm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Graphics capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Computation facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Use of Personal Computer (PC) rather than dedicated terminal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Access to stored images	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. More user friendly software for search and retrieval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Common command/retrieval languages for different data bases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Simplified sign-on procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Provision of data management/private data base services for integration of internal/external data sources :			
On host system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On an in-house system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Provision of decision support services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. User training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Full text v bibliographic services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. On-line document ordering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Alternative delivery mechanisms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please give example: _____			
. Switching easily between different host systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Multiple file searching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Standardisation of manuals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
. Any other service or facility which you consider to be important:			

9. What is your department's approximate monthly expenditure on (please state currency used):

a) on-line data base services	_____
b) VIDEOTEX	_____

10. What do you estimate your department's monthly expenditure will be this time next year (please state currency used) :

a) on-line data base services	_____
b) VIDEOTEX	_____

11. How satisfied are you with the level of pricing for these services, please rate on Scale 1 (very costly) to 5 (good value for the service) :

a) on-line data base services _____
b) VIDEOTEX _____

12. On what basis are you charged for these services; please describe charging method.

a) on-line data base services _____
b) VIDEOTEX _____

13. Are you happy with the current method of charging for these services?

a) on-line data base services YES/NO
If NOT please indicate desired method : _____
b) VIDEOTEX YES/NO
If NOT please indicate desired method: _____

14. What is your view of communications costs as a component of the overall costs for these services?

Very high ☐
High ☐
About right ☐
Not important ☐

15. What is your usage of on-line data base services?

<u>NOW</u>	ON-LINE DATA BASE	VIDEOTEX
Average connect time per session	_____	_____
No of sessions per month	_____	_____
<u>ANTICIPATED THIS TIME NEXT YEAR</u>		
Average connect time per session	_____	_____
No of sessions per month	_____	_____

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

PLEASE RETURN TO:

PETER LINES
INPUT LIMITED
35 PICCADILLY
LONDON W1V 9PB

**APPENDIX E: RELATED INPUT REPORTS AND MAPS/E
1984 PROGRAMME**

APPENDIX E: RELATED INPUT REPORTS AND MAPS/E 1984 PROGRAMME

A. RELATED REPORTS

- On-Line Database Market Opportunities 1984-1989, (U.S. Market) July 1984.
- Local Area Networks: Directions and Opportunities, December 1983.
- Impact of Upcoming Optical Memory Systems, April 1983.
- Personal Computers in the I.S. Strategy, December 1982.
- Western European Market Opportunities for On-Line Database Services, June 1981.
- Market Opportunities for Database Services (U.S. Market), July 1980.

B. MAPS/E 1984 PROGRAMME

- This report has been produced as part of INPUT's Market Analysis and Planning Service for the Information Services Industry in Western Europe in 1984 (MAPS/E).

- The four other reports in this series, to be published during 1984, are:
 - European Information Services Industry Analysis and Forecasts 1984-1989.
 - European Marketing Methods that Increase Sales, June 1984.
 - Integrated DBMS - Application Software Strategies in Europe.
 - Personal-Computer-to-Mainframe Market Opportunities in Europe.

